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6/9/6 (Item 5 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00142926
COMMUNICATION SYSTEM HAVING UNIFIED MESSAGING
SYSTEME DE COMMUNICATION AYANT UNE MESSAGERIE UNIFIEE
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Patent and Priority Information (Country, Number, Date):
Patent: WO 8707801 A1 19871217
Application: WO 87US1088 19870513 (PCT/WO US8701088)
Priority Application: US 86277 19860602
Designated States: AT BE CH DE FR GB IT JP KR LU NL SE
Main International Patent Class: H04M-003/50
International Patent Class: H04L-11:20
Publication Language: English
Fulltext Word Count: 6475

English Abstract
Unified messaging is a concept that provides for a single electronic mailbox for different types of messages. The mailbox can be a user's host computer, PBX, PC, etc., and the user has consistent facilities available to originate, receive and manipulate messages. Messages can be translated from one media to another for reception, and a single message may be composed of parts that use different native media. The message recipient has a single controllable point of contact where all messages can be scanned and/or viewed.

French Abstract
La messagerie unifiee est un concept permettant d'avoir une seule boite a lettre electronique pour differents types de messages. La boite a lettre peut se trouver sur un ordinateur hote, un PBX, un PC, etc, d'un utilisateur, et ce dernier a a sa disposition des capacites compatibles pour envoyer, recevoir et manipuler des messages. Les messages peuvent etre traduits d'un support a un autre pour en assurer leur reception, et un seul message peut se composer de parties qui utilisent des supports natifs differents. Le receveur des messages possede un seul point de contact controlable ou tous les messages peuvent etre analyses et/ou visualises.

Detailed Description
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COMMUNICATION SYSTEM HAVING UNIFIED MESSAGING
Background d 11m Tnvention
This invention relates to communication system message notification systems and more particularly to such systems where messages received from various mediums are all reported to a user at a single point.

It has become common practice within the past few years to arrange a communication system to receive voice messages when a called party is unavailable. The received message is recorded and a notification, usually a lighted lamp, is given to the called party indicating the presence of a message

that is waiting,
As data terminals become popular, people have begun to communicate over the data network by sending 'mail' messages to one another. These messages arrive at the called party's host computer and are queued waiting for the called party to request their presentation in display form on the screen of a terminal connected to the host computer. While this arrangement is a great step forward in the evolution of communication,-it still presents problems in that terminals are not always available for use by a called party. For example, if a data message were to be sent to an electronic address and the addressee were to be away at a location remote from his or her host computer, the received message would not be available to the addressee. Of equal concern, the addressee would not even know that a message has been delivered.

The problems compound when users have several different electronic Imail' services. Users must log on to each such service just to find out if messages are waiting. Then each message is retrieved from each service in a different manner and possibly using different terminals.

Summaa.Qf 2M Tnvention
We have constructed a messaging system which allows a user (addressee) to specify one service as a central repository of messages which are delivered from/by any of the other services available to that user. For example, if a user has a voice mail service associated with a telephone station set and a data mail service available with a terminal (or PC), that user may specify either service as the recipient service. Thus, when a message arrives in either service, the notification of the arrival of that message is given only in the recipient service.

For example, assuming that the user has selected the data **mail** service as the **recipient** service, then a voice message which arrives via the voice service WO 87/07801 PCT/US87/01088 3 alerting/notification and unified message retrieval commands. Finally, UMS provides an underlying application architecture, or unified connectivity, that enables all messaging services to communicate with each other.

Unified messaging system 10 is the one access point for all messages regardless of the message type and regardless of the message origination. This capability is made possible by an underlying message transfer architecture, to be described hereinafter, that forwards messages and message notifications from one service to another. Forwarding can be done automatically under system control, or under direct control by the user.

Users are able to retrieve messages from their chosen unified messaging mailbox using any of several terminal types, such as, for example, terminals 101-108, from any location, local or remote. Thus, a user has unified access to any messaging service such as, by way of example, electronic mail 110,
voice mail 109, private data system 111, local area network 112, message coverage 113 or fax 114. Some of these services, as shown, are controlled directly Trom PBX 12 and some by unified message system 10.

Depending upon the technological limitations of some retrieval devices or some message services, however, users may only be able to retrieve parts of a message or messages in certain forms. For example, from a data terminal (103107) a user can retrieve only the voice mail header or abstract identifying the sender, date, time, etc. Using this header information, a user could select the
desired message and hear the entire voice message on an associated voice

station 101 A limited display telephone 102 can only retrieve abstracts and short messages. Text-to-speech converter 13 uses the well-known text-to-speech technology for media conversion so that most types of messages can be retrieved in voice form from a conventional voice telephone 101,102.

Message senders are able to create a message without -knowing the **recipient** 's retrieval system or retrieval device. For instance, an electronic **mail** user can create a meeting notice and send it to several people. These recipients may or may not be electronic **mail** users. One **recipient** may receive the meeting notice from (1) the United States Postal Service via an electronic paper mail gateway; (2) through text-to-speech conversion; or (3) by calling the message center agent, Yet another recipient may receive the meeting notice on a personal computer. In each case, the sender simply creates the meeting notice, enters the names and addresses of the recipients in a consistent way and sends the mail without having to be aware of the recipients' retrieval services or retrieval devices. It is the recipient who designates one of his/her services 109114, as the receptor service and all messages, or notifications of messages, go to the designated receptor.

Whenever a user-designated receptor receives a new message, be it text, voice or facsimile, that user is alerted to that fact. Alerting is achieved, for example, by lighting message waiting lamp 20 (FIG. 2) which is part of face
plate 201 of users' voice terminal 101 or 102 (FIG. 1). Alerting on data I 0 terminals is achieved by activating the terminal screen indicator on electronic terminals. Users see the illuminated lamp or screen indicator and may then enter their receptor service in the prescribed manner to retrieve their messages.

Notification of new messages is done within the mailbox by !eons or single-line entries on the screen. In cases where messages cannot be forwarded, these notifications tell the users where they have new messages on other services.

A consistent set of message retrieval commands is available from 'every terminal. FIG. 2 illustrates the layout of the basic message retrieval commands that are available via the typical voice terminal key pad. This interface is used, for example, for voice store-and-forward services and for text-to-speech retrieval of text messages. These same message retrieval commands could be available on limited-character display terminals, and on full screen terminals.

Detailed Description
FIG. 3 shows the control or application architecture for the described system. The goal of the application architecture is to provide a basis for interoperation and cooperation between applications distributed throughout a
network, and to ensure a consistent end-user view of basic communication services across various products. The application-architecture includes an application layer 302, a presentation layer 303, as well as a user interface layer 301.

The user interface layer 301 is the end-user point of interaction with the system. It defines standard formats and capabilities for collecting user input and for displaying information (including feedback, error messages and data) to the user. User applications (109, 110, 111) can also make use of the user interface layer 301 services to co ect user

input an to display information in standard ways.
As shown in FIG. 3, application layer 302 includes two major components, namely, (1) message service architecture 40 which cont application independent transmission related services that support store-and
forward message delivery and application specific service functions, and (2) content description architecture 50 which provides a standard way of identifying and describing contents across dissimilar systems.

The presentation layer 303 handles protocol negotiations between peer applications concerning the choice of formats for representing information for transmission (the choice of transfer syntax). Presentation layer 303 services also define such functions as document coding and conversion (303-10), encryption coding and conversion (303-20), and voice coding and conversion (303-30).

As shown in FIG. 4, message service architecture 40 contains three components; message transport header 401, message services protocols 404-405 and message report header 402.

Message transport header 401 is the message envelope that contains information relevant to the transmission of the message: the origination and destination addresses, a time-stamp and various transport options (e.g., grade-of service). Message report header 402 is used to return transmission related status information. Message services protocols 404-405 contain functions required by specific messaging applications such as electronic mail 405 (e.g., copy-to, subject) and notification services 404 (e.g., message waiting indicator, message forwarding).

To digress momentarily, FIG. 15 details the messages exchanged between the unified messaging system (UMS) and the mail service. The messages fall into four categories of actions: (1) update, (2) query, (3) response, and (4) notification. Update messages include requests for updating the alerting mechanism (e.g., turn the lamp on/off), requests for updating the itinerary information stored on the call cover-age (message center) service for accurately answering phone calls and requests for updating forwarding status (e.g., turning the autoforwarding on/off from the call coverage service to the mail service).

Queries are used to ask for accurate status information (e.g., is the forwarding on/off, what is the latest itinerary information, is there new voice mail waiting, etc.) and the responses are used to reply to the queries. Notifications are sent from the UIVIS to the mail service to notify the users of the presence of new messages in their other messaging services.
FIG. 5 shows content descriptor architecture 50 which describes the contents of the message. Contents may be as simple as a user-entered text message or as complex as a voice message embedded in a word-processing document containing a graph and spreadsheet. The basic structure of content descriptor architecture 50 parallels that of the message service architecture. It consists of the unified content description leader (UCDH 501), content services protocol and the described contents. The UCDH 501 contains fields describing the type, encoding characteristics and length of the contents. It is entirely adequate for describing simple contents (e.g., an unformatted text message) or
contents having well-defined and standardized structures. The content descriptor architecture 501 also provides functions for describing non-standard structures.

Following the UCDH are the content services 502, 503. These services

provide additional-information regArding the content sent with the message 401, 404, 405. This information might include the specific format of the content, the type of application used to create the content, the date of creation, the author's name, etc. Finally, the actual contents follows 504, 505, 506, 507. This is the content that was fully described by 501-503 so that the receiving system has enough information to process the contents.
A user agent process on the user's actual messaging service takes the information provided by the sending user (FIG. 10: 1001, 1002, 10037 10047 10057 10069 10077 1008, 1009) and formats it according to the architecture (FIG, lo: 10107 10129 10137 1015-1019) for the particular service. The user agent process then passes this formatted message to a message transport agent located within the user's particular service. The MHS.ASCII is responsible for transmitting the message. It takes the message from the UA and creates the
if envelope" for the message (FIG. 10: 10119 1014). Once the envelope is constructed, the N14HS.ASCH takes the necessary steps to assure accurate transmission of the message to the destination service.

The architectural model underlying N4HS.ASCH is derived from CCITT's Messaging Handling System (NMS), the international standard for exchanging
electronic mail messages. The application layer services provided by MHS.ASCH are a superset of those defined by MHS. With respect to presentation layer services, MHS.ASCH is American Standard Code for Information Interexchange (ASCII) coded, providing compatibility with standard
UNIX System mail and a human-readable format. In contrast, MHS is binary encoded. Thus, if the underlying protocol layers are compatible, communication between MTA and MHS services requires a straightforward conversion at the presentation layer.

Speech Coding
Digital encoding of speech is an old technology, presently used in extensively deployed digital carrier systems. Pulse Code Modulation (PCM) is
the most commonly used method, encoding voice into 56 or 64Kbps. The encoded voice form is a well-defined standard (although two versions exist internationally). More recently, Adaptive Differential Pulse Code Modulation (ADPCM) techniques have been developed that reduce the voice coding rate to 32Kbps, yet retain "toll quality" fidelity. Standards are also in place for these algorithms. When voice coding and storage is intended to occur in customer premises equipment, product designers frequently compromise voice fidelity slightly to obtain reduced storage requirements by using a lower encoding rate.

Te,@J-to-Speech Conversign
Unified messaging retrieval is greatly enhanced by use of text-to-speech technology. This technology allows text message retrieval when the user is at a voice-only instrument. ASCII text is subjected to format processing (e.g., for abbreviations), syntactical analysis and letter-to-phone-me conversion. The resulting representation of phone-mes and stress marks is converted to sound by a set of rules that drive a speech synthesizer. Dictionaries are included to provide proper sounding phone-me strings for words and names that would be incorrectly pronounced by the ASCH-to-phone-me translation algorithm. Textto-speech algorithms are implemented on a single circuit board and work in real-time.

Turning now to FIGS. 6-9, let us look at a service of scenarios to see how

the unified messaging system operates in typical environments. Since, as discussed, a goal of the unified messaging system is to provide users with a
single point of message retrieval, one conceptual message box (universal mailbox) is established for each user. This can be established, ideally, under
user control. A second goal is to provide a single, common alerting when messages are received in the universal mailbox. The user has the choice of where (i.e., in what controlling service) the universal mailbox will be located.

This is accomplished, for example, by users instructing their other messaging 5 services to forward their messages to the unified mailbox. This can be done from the users terminal or by a central administrator. The universal mailbox will be referred to as the prime message receptor and can be classified into one of four message servers. 1) a switch (PBX) -Sased text messaging service; 2) a switch (PBX) based voice messaging service; 3) a stand-alone text messaging service; and 4) a stand-alone voice messaging service. Each of these four major categories will now be described.

FIG. 6 shows a switch based text messaging service which can receive text (data) messages from any remote text messaging service, such as electronic mail service 110 of a message sender, that supports the Nff-IS.ASCH protocol.

Services 109 and 110 are advantageously sending user controllable software residing on any Drocessor associated with the sending user. Services 601 and 602 are receiving user controllable software residing on processors integral with PBX switch 12. Services 603 and 604 are receiving user controllable software residing on stand-alone processors.

When the receiving text messaging service cannot accept voice messages and the sending service is a voice service, such as voice mail 109 (which can be
the well-known Audio Information Exchange Service provided by AT&T), the receiving service can still provide text notifications of messages intended for the end-user, provided the sending service transmits some information pertaining to the message. This information can be the scanline headers or notifications associated with each message. These notifications are used to announce the arrival of new mail in the-xemote system (e.g. "You Have-Voice Mail").

Complete header, or abstract, information is sent instead of notifications when the sending service can support header creation and transmission (e.g. "32
second voice mail from Bill Evancho at xxx-5555 delivered at 12:15am on April 15"). When new mail or notifications arrive at the text mail service, the associated PBX switch 12 is signaled to alert the end-user to new messages, This alerting can be the lighting of lamp 20 at voice terminal 101.

FIG. 7 shows a switch based voice messaging service which receives voice messages from all remote voice messaging systems that support the N4HS.ASCH protocol, Remote text messaging services can deliver to the voice messaging system either (1) the entire message using conventional, well-known text-tovoice translated information; (2) headers about the text information stored on the remote text system (e.g. "text mail of 532 characters, from Tony Selemi, at 3:20pm on 4/17, subject: meeting cancellation"); or (3) a notification message (e.g. "You Have Text

Mail"). As discussed'above, when new messages arrive at the voice messaging service, the associated switch is signaled to alert the enduser to new messages.

FIG. 8 shows a stand-alone text mail service where messages are received exactly as in scenario 1 (FIG. 6). However, the alerting function is achieved by means of a message request sent from text messaging service 604 to switch based processor 12 via unified messaging system 801. Unified messaging system 801 is processor resident software residing on any system processor, including PBX switch 12 processor. Software in the unified messaging system 801 exchanges a protocol with switch 12 to provide commands for lighting and extinguishing alerting lamp 20 of voice terminal 101.

FIG. 9 shows a stand-alone voice messaging service where messaging is provided, as in scenario 2 (FIG. 7), and alerting is provided, as shown in scenario 3 (FIG. 8).

As shown in FIG. 10, the user enters his or her mail service and requests to create a mail message (e.g. CREATE **MAIL** 1001). The service asks the user for the first **recipient** (TO 1002) and the user enters the recipient's name, "Tom Smith". The application also asks the user for more (TO), for copy-to recipients (CC) and for blind-copy recipients (BCC). The service asks the user for a subject, (SUBJECT 003) and the user can enter-some information to serve as a subject. The service asks the user to enter a message and the user does so. The service, blocks 1004-1009, asks the user if he/she wishes to attach a document (such as a spreadsheet, graph, memo, etc,). If the user does want to attacha document, the application asks the user for information regarding the document, for example, the document name, file folder, keywords, etc. If the
user does not wish to attach a document, or when the document attaching request is completed, the application asks the user if he/she wants to defer - 10delivery of the message for a later time. If so, the user supplies the necessary information, for example, the date and time.

The information obtained by the service from the user's input is formatted according to the underlying architecture, as shown in FIGS. 3, 4 and
5 5. Each component of the message is formatted in a "keyword: value" structure. The recipients' names are **mapped** to a logical and a physical **address** for connecting to the recipient's receiving application (i.e. the destination **address**). This could take the form of a device line **number** and a **telephone number** , block 1010. The software control to perform this function is now wellknown.
A universal header is created, block 1011 (FIG. 4, message transport header 401), from the information supplied by the user, for instance, the user's
name and **address** (logical and physical), the names and addresses of the
recipients, the date and time the message was created, deferred delivery information, and specific information about what follows such as the type of message. A service @rotocol is created, block 1012 (FIG. 4, mail 405), including service information which includes the recipients' names (and addresses if supplied) as entered by the user, the subject, sensitivity, etc. The actual message (e.g. "Please meet me for lunch outside the cafeteria") is also formatted with descriptive information regarding the type of the message, for example, TEXT, and the length of the message, block 1013 (FIG. 5, 501, 502 and 504). If the user had attached a document, for example a spreadsheet, the application WO 87/07801

PCF/US87/01088 messages. This alerting could be accomplished through the illumination of a light on the voice or data terminal. Alerting for all messages, regardless of which service sent the message, is via a single service, called the receptor service, by the recipient user.

Several different message retrieval scenarios are shown in FIG. 11. Using a multi-frequency (NE) voice telephone terminal, the user picks up the receiver and accesses the message receptor service 1101 by dialing a particular number, a dial access code, or a feature button on the telephone. The user enters the login 1102 via the NIF button and enters a password 1103 (optionally). At this point, the user might hear a welcome message 1104. The user can either go directly into the retrieval process or execute another command available on the service. When entering the retrieval procedure, the user might hear the first scanline (header 1105) of the first message. This could sound like, "Thomas Smith x3887 called on April 4th at 10-15am, the message is 20 seconds long".

The user could listen to this message or skip to the next header and decide if he/she wanted to hear that 'message, At any time, the user has the ability 1106 to stop the retrieval session, replay a message, delete a message, save a message, skip a message, etc. When the user has completed retrieving the messages, the service 1107 might tell the user that there are new messages waiting in other services, thereby notifying the user of the presence of new messages not in the voice service. When the user has finished with all the messages in all the services, the receptor service tells the other services to turn off the user's message waiting indicator.

FIG. 11, blocks 1110-1115, show a situation where the user is retrieving the messages from a voice terminal with an integrated limited data display set, (FIG. 1, 102) such as a 40-character display set. Access to the, message receptor service is the same as discussed above, as are the login and password and welcome message steps. However, instead of hearing the header of the message, the header is displayed to the user on the 40-character display and would
appear as "T. Smith x3887 April 4 10:15am". From this point, the same message manipulation options, as discussed above for the voice terminal, are available, and the system operates in the same manner.

- 12
In FIG. 11, blocks 1126-1127, show a situation where messages are retrieved from the unified mailbox through a data device, such as a data terminal 103 (FIG. 6) or a Personal Computer (PC) 104 (FIG. 1). The user accesses the application in which the unified mailbox resides. This access can 5 be accomplished thrQugh a variety of means, such as a hardwired connection, a
local area network (LAN), dial-up lines, etc. The user may enter a login (username) and a password and then request to enter the messaging service.

When retrieving mail, the user sees a scaniine of message headers, as shown at the bottom of FIG. 11. As discussed above, the user is free to manipulate those messages (open, delete, save, reply, forward, etc). The user can read the messages. If a message has an attachment 1126, the service could invoke an editor capable of handling that attachment. This service also notifies the user of messages waiting in other messaging services which did not or could not forward their messages to this unified mailbox. If this data device has an associated voice device, the user may hear voice messages from-the voice service.

FIGS. 12, 13 and 14 detail the originating and sehding of messages. In FIG. 12, blocks 1201-1208, th6 prime message receptor is a voice-only mailbox.

When the sending system is another voice application, the voice message is formatted appropriately, as shown in FIG, 10, and sent to the prime message
receptor. When the sending system is a text-based messaging service, blocks 1220-1230, there are several ways that the message, or information regarding the message, can be sent to the voice-based prime message receptor.

These are
1. The text service can send the entire message as if the destination service were also text-based; the message will be converted from text to voice and will
be retrievable from the voice-based prime message receptor;
2. The text service can send the header of the message which will get converted
to voice and will be retrievable from the prime message receptor; or
3, The text service can notify the voice-based prime message receptor that the user has new text messages.

When the service with the voice-based prime message receptor receives both voice and text-to-speech converted messages, it first checks to make sure that the user is not forwarding messages to yet another service. If the user is, then all these messages get forwarded to that service. If not, then the service tells the switch (or the service actually controlling the terminal) to turn on the user's message waiting indicator. ThAr alerts the user to the fact that there are new messages. The messages are retrievable from the prime message receptor, as discussed above. In the case of text messages converted to voice, users manipulate the messages as they do other messages. If the user just receives a Voice version header of the text message, the user may request that the sending text application forward the entire message over for retrieval from that point.

When all the messages are retrieved, the service tells the switch to turn off the userls message waiting indicator.

FIG. 13 shows the situation when the receptor system is a text-based system. In the case of a voice message, blocks 1301-1309, designated for the text-only unified mailbox, the voice service, upon seeing that the destination does not have voice capabilities, may do several things.

1. The voice service may send a notification to the text-only unified mailbox
telling the **recipient** that there is new voice **mail** waiting; or P
2. The voice service may send a text version of the voice header to the text-only unified mailbox.

FIG. 14 shows the situation when the prime message receptor is a voice/text integrated system. Voice messages, blocks 1401-1408, designated for the voice/text integrated system, are sent in their entirety. Text messages, blocks 1420-1428, designated for the voice/text integrated systems, are also sent in their entirety. Recipients can now retrieve all their voice and text messages through one system 1409. All subsequent actions, blocks 1410-1418, are the same as those -in FIGS. 12 and 13.

FIG. 15 shows the flow of messages between the service supporting the unified mailbox and the service integrated with the switch for alerting users of new messages. The service integrated with the switch 1502, which -we-will, abbreviate UMM for unified messaging manager, serves both as a gateway to the switch and as a gateway to other switch-based messaging services, It turns the message waiting indicator on/off based upon requests from the unified mailbox.

In turn, it queries the unified mailbox as to its status for users it serves. In addition, the unified mailbox can query UNIM 1502 as to the status of messages for other services.

- 14

Conclusion

The underlying constructs of unified messaging can be extended beyond simply interpersonal messaging and voice/text media. All information exchange can be conceptualized as a form of a message, a form of communication.

Unified messaging can encompass more than described herein. Basically, this expansion of the concept falls into two categories: (1) type of media in which the information is encoded; and (2) the intended purpose of the information being exchanged.

Within this specification, information has generally been discussed with reference to voice and/or data. However, the concepts disclosed can support any type of media and format for information exchange. For example, UMS can support the exchange of video images as messages or facsimile mail messages or voice-annotated text messages, etc.
In addition, the discussion herein has been in terms of interpersonal messaging and information exchange. Again, the concepts disclosed can support
information exchange for any purpose. Systems could utilize the unified messaging architecture to exchange switch traffic information, usage reports, directory information and updates, business analysis information, etc.
Expansion of our concepts is easily attained due to the modularity and flexibility of the underlying architecture developed to be independent of the information format/media and intended purpose of the information exchanged.

Claim

I. A message delivery arrangement for use in situations where a plurality of users exchange voice or data messages with one another, said messages being stored for subsequent delivery to the message recipient, and wherein said data messages are typically delivered to a data terminal and said voice messages are
typically delivered to a voice terminal, said arrangement comprising
means controlled by potential message recipients for'designating either the recipient's voice terminal or the recipient's data terminal as the prime
message receptor,
means controlled by said designating means for sending to said prime message receptor notifications of the arrival of either voice or data messages,
and
means controlled by said prime message receptor and responsive to receipt of each said notification for alerting said recipient of said

received
notification.

2 The invention set forth in claim 1 wherein said alerting is independent of said recipient's activity with respect to said receptor,

3 The invention set forth in claim 1 further comprising means controlled by any said recipient upon being alerted of receipt of a voice or data message for
retrieving said message from said receptor,

4 The invention set forth in claim 3 wherein said retrieving means is selectively controllable by said recipient.

5 The invention set forth in claim 3 wherein said retrieving means includes means for converting data messages into voice message equivalents
when said receptor is designated to be a voice terminal.

6 The invention set forth in claim 3 wherein said retrieving means includes means for generating from received voice messages information pertaining to the terminal designation of the message sender when said receptor
is designated to be a data terminal.

7 The invention set forth in claim 3 wherein said retrieving means is responsive to a set of commands which are uniform for all said receptors.

8 The invention set forth in claim 1 further comprising means for receiving messages from sources other than said community of communication
system users, and
means for providing notifications via said receptor for any said received other source message.

9 A message delivery system for controlling the delivery of messages to message recipients, said messages communicable to a message recipient via any 5 of a plurality of message networks and received by a control service associated with said message network for said message recipient, and wherein messages which are in data format are typically delivered to a data terminal accessing a particular one of said control services and wherein messages which are in voice format are typically delivered to a voice terminal accessing one of said control
services, said system comprising
means for designating for each potential message recipient a particular one of said control services as the prime message receptor,
means controlled by said designating means for sending to said prime message receptor notifications of the arrival of either voice or data messages,
and
means controlled by said prime message receptor and responsive to receipt of each said notification for alerting said recipient via one of said
terminals controlled by said prime message receptor of said received notification.

10 The invention set forth in claim 9 further comprising means controlled by any said recipient upon notification of receipt of a message directed to any of said recipient's control services for retrieving said message

from said receptor.

11 The invention set forth in claim 10 wherein said retrieving means is controllable by said recipient to provide said messages at a terminal selected by
said recipient.

12 The invention set forth in claim 11 wherein said retrieving means includes means for converting data messages into voice message equivalents when said message providing terminal is selected to be a voice terminal.

13 The invention set forth in claim 10 wherein said retrieving means is responsive to a set of commands which 'are uniform for all said control services.

14 A consolidated message delivery system operable for providing notifications to a single user terminal when messages are directed to any one of a plurality of terminals associated with said user, said system comprising
means for receiving any said messages,
means for generating for any said received message an abstract of said message, said abstract including pertinent information pertaining to said message,
means for designating for a message receiving user which terminal is to receive said notifications, and
means responsive to messages directed to any one of said receiving,
user's terminals for providing notification of said message, including said abstract, to
said designated user terminal.

15 The invention set forth in claim 14 wherein said notification is provided independent of said receiving user's activity with respect to said.
designated user terminal.

16 The invention set forth in-claim 14 further comprising means controlled by any said receiving user upon receiving said notification of said
message for retrieving said message from said receptor.

17 The invention set forth in claim 16 wherein said retrieving means is selectively controllable by said receivinj user.

18 The invention set forth in claim 16 wherein said generating means includes means for converting data messages into voice message equivalents
when said designated user terminal is a voice terminal.
19 The invention set forth in claim 18 wherein said generating means includes means for generating from received voice messages information pertaining to the terminal designation of the message sender when said designated user terminal is a data terminal.

20 The invention set forth in claim 16 wherein said retrieving means is responsive to a set of commands which are uniform for all said designated terminals.

21 A message delivery method for use in situations where a plurality of users exchange voice or data messages with one another, said messages being stored for subsequent delivery to the message recipient, and

wherein said data messages are typically delivered to a data terminal and said voice messages are typically delivered to a voice terminal, said method comprising the steps of - 18
designating, under control of potential message recipients, either the recipient's voice terminal or the recipient's data tern;Jinal as the prime message
receptor,
sending to a designated prime message receptor notifications of the arrival of either voice or data messages, and
alerting, under control of said designated prime message receptor and responsive to receipt of each said notification, said recipient of said received
notification.

22 The method set forth in claim 21 wherein alerting step is independent of said recipient's activity with respect to said receptor.

23 The method set forth in claim 22 further comprising the step of retrieving said message from said receptor by said recipient upon being alerted
of receipt of a voice or data message;

24 The method set forth in claim 23 wherein said retrieving step includes the step of converting data messages into voice message equivalents when said
receptor is designated to be a voice terminal.

25 The method set forth in claim 23 wherein said retrieving step includes the step of generating from received voice messages information pertaining to the terminal designation of the message sender when said receptor is designated
to be a data terminal.
26 The method set forth in claim 21 further comprising the step of receiving messages from sources other than said community of communication
system users, and
providing notifications via said receptor for any said received other source
message.

27 A consolidated message delivery method operable for providing notifications to a single user terminal when messages are directed to any one of a plurality of terminals associated with said user, said system comprising the
steps of
receiving any said messages,
generating for any said received message an abstract of said message, said
abstract including pertinent information pertaining to said message,
designating for a message receiving user which terminal is to receive said
notifications, and
providing, in response to messages directed to any one of said receiving user7s terminals, a notification of said message, including said abstract, to-said
designated user terminal.

28 The method set forth in claim 27 wherein said notification is provided independent of said receiving user's activity with respect to said designated user

terminal.

29 The method set forth in claim 27 further comprising the step of retrieving, under control of any said receiving user upon receiving said notification of said message, said message from said receptor.

30 The method set forth in claim 29 wherein said retrieving step is selectively controllable by said receiving user.

31 The method set forth in claim 29 wherein said generating step includes the step of converting data messages into voice message equivalents
when said designated user terminal is a voice terminal.

32 The method set forth in claim 31 wherein said generating step includes the step of generating from received voice messages information pertaining to the terminal designation of the message sender when said designated user terminal is a data terminal.

33 A message protocol for controlling the delivery of standard and non standard messages to message recipients, said messages communicable to a message recipient via any of a plurality of message networks and received by a control service associated with said message network for said message recipient, and wherein messages which contain data are typically delivered to a data terminal accessing a particular one of said control services and wherein messages which contain voice are typically delivered to a voice terminal accessing one of said control services, and wherein for each potential message recipient there is designated a particular one of said control services as the prime message receptor for receiving notifications of the arrival of either voice or data messages and for alerting said recipient via one of said terminals controlled by said prime message receptor of said received notification said protocol comprises a message transport header containing information common to said messaging services and
relevant to transmission of a message, followed by
- 20 a message service layer containing service disposition information of each said message and containing functional parameter information to be applied by
said service, and followed by
at least one content descri&ion header containing information describing the structural contents of each said message.

34 The protocol set forth in claim 32 wherein said content description header is followed by at least one content service layer containing information describing the specific attributes of non-standard messages.
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6/9/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01383481
Unified communications, automated personal name addressing
Vereinheitlichte Kommunikationen, automatisiertes personliches Namensadressierung
Transmissions unifiees, adressage des noms personnels automatise
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PATENT (CC, No, Kind, Date): EP 1175075 A2 020123 (Basic)
APPLICATION (CC, No, Date): EP 2001306200 010719;
PRIORITY (CC, No, Date): US 619276 000719
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: H04M-003/533
ABSTRACT EP 1175075 A2
A unified communications automated personal name addressing system is provided. The system creates personal address books for system subscribers automatically, without requiring the manual entry of name and address pairs by the subscriber. The system enables a subscriber to appropriately address a communication by providing the name of the intended recipient. In particular, the system of the present invention allows a subscriber to conveniently address any type of communication that may be sent from a unified communication server, even while interfacing with the unified communications server using a conventional voice telephone.
ABSTRACT WORD COUNT: 92
NOTE:
Figure number on first page: 1

LEGAL STATUS (Type, Pub Date, Kind, Text):
Application: 020123 A2 Published application without search report
LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200204	820
SPEC A	(English)	200204	6390
Total word count - document A			7210
Total word count - document B			0
Total word count - documents A + B			7210

SPECIFICATION EP 1175075 A2

FIELD OF THE INVENTION
The present invention relates to automated personal name addressing in a multi-media messaging environment.

BACKGROUND OF THE INVENTION
Unified communications systems combine the functionality of a

centralized voice/fax/e-mail messaging system (i.e. a unified messaging system, such as the Intuity(R) or AnyPath(R) system of Lucent Technologies Inc.) with the functionality of a live communications network (e.g., the public switched telephone network or a private branch exchange) to enable subscribers to reply to calls or messages, or to make calls or send original messages. In a unified communications system, messages in the form of e-mail are common. E-mail addressing typically requires the entry of alpha-numeric strings, including special characters that are not normally found on the keypad of a telephone. Because the entry of alpha-numeric strings and special characters from a telephone is at best cumbersome, most unified communications systems restrict the addressing of messages originating from a telephone interface with the unified communications system to those addresses that have been preadministered in a system directory, or that can be identified uniquely by a telephone number. Therefore, providing a convenient messaging system in a unified communications system typically requires the association of message addresses with the names of recipients by a directory administrator. Although the creation of such a directory is feasible in a corporate environment where the directory generally includes only employees of the enterprise, such a solution is not available to users requiring address directories made up of addressees outside of the enterprise.

In the enterprise environment, a shared system directory that is prepared by a directory administrator and that is searchable by the name of the addressee generally allows a user to locate a desired address by speaking or otherwise entering the addressee's name, without the need to enter a complicated address. However, these techniques are not scalable into the service provider or Internet markets because the concept of sharing a corporate directory to improve internal corporate communications does not apply to individuals who subscribe to service provider services. Also, a comprehensive directory could produce so many hits (or matches) upon entering a name that disambiguation of the returned addresses would often be too complicated and time consuming for the common user. Furthermore, the creation of a unified directory in a geographic area for use by individual consumers would be inefficient, as the vast majority of the addressees included in such a directory would be of no interest to other local consumers. In addition, such a directory would be unreliable, since it would be in a nearly constant state of change, and since there would be no ability to validate new addresses, as no single authority exists for the assignment of all of the various forms of addressing that may be accessible through a unified communications system.

In order to enable e-mail addresses to be entered from a telephone, voice mail vendors have attempted to map telephone numbers to e-mail mailboxes. However, such schemes become untenable when there is not a one-to-one correspondence between telephone numbers and e-mail addresses. Computer application programs providing personal address books are available, however, these programs generally require manual pre-administration by the user, and users are not inclined towards completing tasks ahead of time that are not directly related to a communications scenario. Therefore, existing systems provide no satisfactory method of automatically creating a personal directory of addresses for use by individual subscribers of unified communications systems.

SUMMARY OF THE INVENTION

The present invention is directed to solving these and other problems and disadvantages of the prior art. Generally, according to the present invention, an address repository or communications log is maintained on the unified communications system server on behalf of each subscriber.

The communications log includes a name and address pair for each communication scenario, such as a phone call, a voice mail, a fax message, an Internet phone call, an e-mail or instant messaging service message, that is received or sent by the subscriber using any communications channel monitored by the server and having an **address** associated with the subscriber. When the communications scenario involves a message, the name and **address** pair may be collected by parsing the header information association with the message. When it involves an incoming call, the **name** and **address** (□number□) information may be derived from the network call set-up message (e.g. SS7-1SUP, ISDN, or caller identification (caller ID)) information conventionally received as part of the **telephone** answering scenario. The **address** (□number□) associated with outgoing voice or facsimile **telephone** calls made while connected to the unified communications system may be collected, and a **name** associated with each **number** by either referring to a network for **number** -to- **name** **mapping** , or by prompting the subscriber to record a brief voice tag to associate with the **number** . This voice tag would be used in place of the text-name confirmations when confirmations are played. It would also serve as a prompt for entering a text-name at a later time when accessing the universal communications server using a text-capable instrument such as a P.C.

In a further embodiment, more complete telephony integration techniques can be employed to capture both dialed call information and incoming call information for telephony call scenarios that are completed without involving the unified communications system. For example, the name and telephone number pair associated with a call to or from the subscriber's telephone may be collected by a telephony circuit switch operating in cooperation with the unified communications server. If the switch collects only a number, the universal communications server can perform a reverse phone number look up on the network to obtain the associated name. Name and address pairs so collected may then be automatically added to the communications log. It is important that these name/address pairs be stored together in the subscriber's communication log so that the search scope is limited for touch tone look-up and voice recognition look-up.

The individual subscriber may also add entries to a server side personal address book using a graphical user interface to enter name, e-mail address, voice and facsimile telephone number information and other addressing information in a conventional manner. Name and address pairs entered by the subscriber in the personal address book are automatically made a part of the communications log. Also, using a graphical user interface, previously captured number/voice tag pairs can be revised to have a full text-name added.

The communications log is intended to be used as a directory by a variety of client devices or applications in support of their associated name-addressing and name-dialing scenarios. These clients include standard e-mail clients, which access the communications log via a standard lightweight directory access protocol (LDAP) interface, dial tone multiple frequency (DTMF) telephone user interfaces, which access the directory by entering the DTMF key spelling of the recipient's name, voice command telephone user interfaces, which access the directory by speaking the name of the recipient, and web-based graphical user interfaces, which access the directory by typing a partial name or by scrolling through the log to pick a recipient.

A web-based graphical user interface may also be used to directly enter, modify, or validate the entries in the communications log. For example, this communications log administrative user interface may be used to import the contents of a personal address book into the communications log. It may also be used to directly administer new entries into the log, or to complete partial entries in the log such as

entries with only voice-tags that require text names to become complete name address pairs.

The purpose of all name addressing and name dialing scenarios is to select the exact address associated with the proposed name and to provide a confirmation back to the user that the appropriate address has been selected. Since the contents of the communications log evolves automatically as it tracks each new communications event, and since name matching using DTMF key spelling or voice command input can produce multiple matches for a single proposed input, the matched addresses might seem unpredictable without a mechanism to stabilize and prioritize the results.

A re-usability level and a use count is maintained for each name address pair in the communications log to ensure more predictable results on frequently used addresses. When the communications log is searched by name, the scope of the search may be confined to particular reusability levels. For example, a focused search may include only levels one and two, whereas an expanded search (typically used when a correct address is not found in the focused search) may include only levels three through six. Levels seven and eight are always excluded from name searches, but exist in the communications log to prevent failing or erroneous addresses from reappearing in the log. When a search produces multiple results, the results are returned in priority order first by re-usability level and then by use count. This arrangement ensures that a single appropriate address will be returned on the first attempt in the majority of uses. A subscriber may also access his or her communications log through other interfaces that may be available, such as a computer graphical user interface interconnected to the communications server.

These and other advantages and features of the invention will become apparent from the following description of an illustrative embodiment of the invention taken together with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates the general system topology surrounding a unified communications server according to an embodiment of the present invention;

Fig. 2 is a functional flow diagram of the operation of a unified communications personal name addressing system according to an embodiment of the present invention;

Fig. 3 illustrates various communications scenarios involving a unified communications personal name addressing system according to an embodiment of the present invention; and

Fig. 4 illustrates a communications log according to an embodiment of the present invention, including examples of entries that may be contained in such a log.

DETAILED DESCRIPTION

Fig. 1 illustrates the general system topology surrounding a unified communications server 100. The unified communications server 100 is generally connected to a plurality of communications channels. For example, as illustrated in Fig. 1, the server may be connected to the public switched telephony network (PSTN) 102 over voice trunk 104 and call control 106 lines. The call control line 106 may be a Signaling System 7 (SS7) call control link. In certain cases, the functionality of the call control link and voice trunks may be provided via a single interface, such as an integrated services digital network (ISDN) interface. At the PSTN 102, the voice trunk 104 and call control 106 links are interconnected to a circuit switch 108. The circuit switch 108 is in turn interconnected to a subscriber telephone 110, and either directly through the switch or indirectly through the telephony network

102 to a plurality of non-subscriber telephones 112 and facsimile machines 114. The circuit switch 108 may also be connected to a subscriber facsimile machine 115. Although the unified communications server 100 is illustrated as being directly connected to the PSTN 102, the server 100 may be directly connected to a private branch exchange (PBX) and/or an Internet telephony network, with further connections to the PSTN 102 made through the PBX and/or the Internet telephony network. Also, although a wide variety of subscriber client types may be serviced by the present invention, it should be understood that the system can also be used beneficially by a subscriber having only one or a few of the potential client types.

The unified communications server 100 may also be interconnected to a commmications channel comprising a computer network or an Internet protocol (IP) network 116. For example, the server 100 may be interconnected to the Internet. The unified communication server 100 may be interconnected to the Internet protocol network 116 over a computer network link 118. The link 118 may comprise any type of local or wide area network (LAN/WAN). For example, the link 118 may be an Internet protocol link. The link 118 is generally interconnected to a router 120, to provide connectivity to the larger Internet protocol network 116.

The unified communications server 100 includes interfaces for interconnecting the server 100 with the PSTN 102 and the IP network 116 over the various links 104, 106 and 118. In addition, the unified communications server 100 provides a subscriber mailbox 122, a subscriber address book 124, and a subscriber communications log 126. The mailbox 122, address book 124 and communications log 126 may be implemented as a suitably programmed general purpose computer interconnected to the unified communications server 100, or as suitable programming to the server 100 itself. A mailbox 122, address book 124 and communications log 126 are generally provided for each subscriber. The subscriber mailbox 122 generally allows for voice and facsimile messages directed to the subscriber telephone 110 or facsimile machine 115 to be stored. In addition, the mailbox 122 provides storage for electronic mail messages, such as those in the simple mail transfer protocol (SMTP) format and directed to the subscriber's e-mail address and sent over the IP network 116. The mailbox 122 may also provide storage for other types of electronic messages, such as messages directed to a subscriber paging device, short messages directed to a mobile handset, or messages received according to an instant messaging system protocol. A subscriber telephone interface 130 is also provided as part of the unified communications server 100 to allow the subscriber to interact with the server 100 using a telephone 110 or 112.

The subscriber may retrieve messages from the mailbox 122 by placing a telephone call to the unified communications server 100, or otherwise establishing a communications link with the server 100, and having messages stored in the mailbox 122 played back or displayed. Where messages are in a textual form, such as facsimile or e-mail messages, the unified communications server 100 may provide a text to speech (TTS) function to deliver the message to the subscriber over a telephone 110 or 112. The subscriber may also retrieve messages from the mailbox 122 using a client computer 132 connected to the server 100 through a connection made over the IP network 116. Additionally, the subscriber may direct the system to output facsimile messages, or through a text-to-fax facility that may be provided by the server 100, e-mail messages, at a facsimile machine 114 or 115.

According to the present invention, the communications log 126 serves as a repository of name and address pairs for communications originating at or directed to the subscriber mailbox 122, the subscriber telephone 110 the subscriber facsimile machine 115, the subscriber e-mail address, and other subscriber addresses associated with communications channels

monitored by the unified communications server 100. The communications log 126 may also contain name and address pairs entered in the address book 124. The address book 124 comprises addresses paired with names that have been entered in the address book 124 by the subscriber. The name and address pairs contained in the address book 124 may be automatically made a part of the communications log 126 after they have been entered in the address book 124.

With reference now to Fig. 2, the operation of a unified communications automated personal name addressing system according to an embodiment of the present invention is illustrated. Initially, at step 202, the server 100 monitors the communications channels over which communications may be sent to or from a subscriber. At step 204, communication on a monitored channel is detected, and at'step 206, the non-subscriber address associated with the communication is collected. That is, the address of the recipient or recipients of a communication sent by the subscriber, or the address of the sender of a communication directed to the subscriber, together with the addresses of peers who also received the sent message, are collected. At step 208, the nonsubscriber name is collected, and at step 210 a name and address pair comprising the collected nonsubscriber address and nonsubscriber name is created or, if the pair already exists, the maintenance parameters are updated. The name and address pair thus created is stored in the communications log 126 belonging to the subscriber with whom the communication is associated. In this general way, name and address pairs are added to a subscriber's communications log 126, generally without requiring action or intervention by the subscriber. The examples set forth below illustrate particular scenarios that can result in the addition of name and address pairs to the communications log 126 of a subscriber.

With reference now to Fig. 3, various communications scenarios involving the unified communications personal name addressing system of the present invention are illustrated. As described above, according to the present invention, the unified communications server 100 includes a subscriber mailbox 122, a subscriber personal address book 124 and a communications log 126. Generally, the illustrated scenarios occur either with the active participation of the unified communications server 100, or as part of "out of server" scenarios 302 external to the unifiedcommunications server 100.

According to a first scenario, communications from a sender are deposited directly in the subscriber mailbox 122. This mailbox delivery 304 scenario generally occurs in connection with e-mail messages, such as those sent according to the simple mail transfer protocol (SMTP), or other electronic messaging protocols. In addition, mailbox delivery 304 may include the delivery of addressing information to the subscriber mailbox 122. This information may be delivered to the mailbox 122 as a Multipurpose Internet Mail Extension (MIME) attachment to an e-mail message, with the addressing information formatted according to a predetermined specification. For example, the addressing information may be formatted according to the vCard(TM) specification administered by the Internet Mail Consortium.

As part of the mailbox delivery 304 scenario, address and name information may be collected from e-mail messages by parsing the information contained in the header of the message to extract the address and name of the sending party. For example, the information contained in the RFC 822 header of a SMTP message may be parsed to extract a name and address pair. Name and address pairs so collected may include the name and address pair of the sender, as well as the names and addresses of any other recipients of the message. Once extracted, this information is stored in the communications log 126 of the unified communications server 100. Preformatted addressing information, such as information contained in a vCard(TM), generally includes a plurality of addresses associated

with a single name. When such information is received, the name and all of the associated addresses may be stored in the communication log 126 as additional name and address pairs.

Electronic communications sent from the communications server 100 may also serve as a source of name and address pairs. Accordingly, name and address pairs corresponding to the recipients of outgoing messages may be captured and those name and address pairs stored in the communications log 126. This message submission 306 scenario automatically enters the name and address pairs of message recipients in the communications log 126 when electronic messages are sent, without requiring the subscriber to manually direct or authorize the inclusion of the pairs in the subscriber's address book.

Another messaging scenario which may provide name and address pairs for inclusion in the communications log 126 occurs when telephone calls placed to the subscriber telephone 110 are redirected to the unified communications server 100 for service. This telephone answer 308 scenario occurs when no one is available to answer the subscriber telephone 110, or the telephone line associated with the telephone 110 is otherwise in use. Generally, telephone calls placed across the PSTN 102 include associated call information. In many cases, this information includes both the originating telephone number and the name of the holder of that telephone number. The name and address pair obtained from call information may be conventionally provided to the unified communications server 100 over the SS7 call control link 106 or equivalent ISDN functionality. Alternatively, a name and address pair may be obtained from a network directory 128. The name and address pair from scenario 308 can be automatically stored in the communications log 126 upon receipt by the communications server 100.

The call transfer scenario 310 occurs when the subscriber places telephone calls while the subscriber is connected to the unified communications server 100. According to the call transfer scenario 310, the user first connects or is connected to the communications server 100, and the subscriber then enters the digits of the telephone number to be called. The unified communications server 100 uses the dialed telephone number to search a network directory 128 (see Fig. 1) for an associated name. If the search of the network directory 128 returns an associated name, the resulting name and address pair is automatically stored in the communications log 126. If the search is unsuccessful, the unified communications server 100 of the present invention may prompt the subscriber to record a voice tag to associate with the dialed number. This tag is useful to provide name confirmation via playback if the number is used again, and also captures the name which can later be added in text form to the log during a separate log maintenance activity.

Name and address pairs for inclusion in the communications log 126 may also be collected in connection with out of server scenarios 302, which take place without the direct involvement of the unified communications server 100. In the incoming call scenario 312, a telephone call is placed to the subscriber telephone 110, and that call is terminated without involving the unified communications server 100. For example, the subscriber may pick up the telephone 110 or the caller may terminate the call before the telephone 110 is answered by either the subscriber or the unified communications server 100. In this situation, where the switch 108 of the PSTN 102 associated with the subscriber telephone 110 is an intelligent network switch, a software trap condition may be set to collect the originating telephone number. Accordingly, the incoming call scenario 312 is similar to the telephone answer scenario 308 in the way that name and address pairs are collected. Similarly, in an outgoing call scenario 314, a software trap may also be set in an intelligent network switch 108. The numbers trapped in connection with these out of server scenarios 302 may be associated with a corresponding name by referring to

a network directory 128, and the name and address pair may be formatted for inclusion in the communications log 126. The name and address pairs thus collected may be communicated to the unified communications server 100 in real time or in batches, and this communication may occur over the SS7 call control link 106 or over an IP network connection service dedicated to receiving communication log batch updates.

Where the switch 108 is not an intelligent network switch, information regarding dialed telephone numbers and associated names may be collected from the call detail records associated with the subscriber telephone 110. However, the use of call detail records generally requires that the name and address pairs collected from the call detail records be delivered to the communications log 126 sometime after the call is made, as the call detail records are generally not immediately available. Accordingly, when name and address pairs are collected using call detail records, they are generally delivered to the communications log 126 in batches over an IP network connection service dedicated to receiving communication log batch updates.

As part of the subscriber submission scenario 316, entries to the communications log 126 may also be made from a subscriber's personal address book 124. A personal directory or address book 124 is a collection of addresses entered or otherwise administered by the subscriber.

According to the present invention, the address book 124 information may be automatically added to the communications log 126 for use in combination with the other name and address pairs collected by the system. According to one embodiment, information contained in the address book 124 is automatically added to the communications log 126 as soon as that information is entered in the address book 124 by the subscriber. Alternatively, the subscriber may use a graphical user interface for communications log administration.

According to the present invention, addresses may be marked or identified in the communications log 126 according to the level of confidence in the reusability of the individual name and address pairs. The ranking of name and address pairs according to confidence levels is believed to increase the usability of the system in providing the subscriber with the intended address, simplifies the disambiguation of similar names, and increases the accuracy of the system.

A first level of reusability in a name and address pair is assigned to entries that have been administered. Administered entries include those entered by the subscriber or created by some authority. Accordingly, administered addresses include those name and address pairs originating from the subscriber's personal directory 124, entries in the communications log 126 that were automatically collected and that have been edited or otherwise administered by the subscriber, and administered directories obtained from, for example, enterprises, that have been added to the communications log 126.

At a second level of re-usability are used name and address pairs. These include dialed numbers and addresses found in the "To:", "CC:" and "BCC:" headers of mail sent by a subscriber. These are asserted to be accurate by the subscnber. If an "@" appears in the name field of an RFC822 header, it is considered an uninitialized name.

At a third level of reusability are received name and address pairs. Received name and address pairs include names and addresses parsed from header information attached to incoming e-mail messages, caller ID or network directory information associated with an incoming telephone call, and addressing information received in a vCard(TM) or in a message formatted according to some other electronic messaging protocol. Such received name and address pairs are likely to be accurate, because they are usually associated with the incoming message or telephone call

automatically by the sender's electronic messaging application or by the telephone system network directory.

A fourth level of reusability may be assigned to the name and address pairs of other recipients of a message, for example, the names and addresses of other persons to whom an e-mail message was sent (i.e. peers copied). These associated name and address pairs are generally assigned a lower level of confidence than asserted name and address pairs.

A fifth level of reusability may be assigned to name and address pairs from categories levels one through four of another user's communication log. Strictly speaking, these level five entries are not name and address pairs, but rather indicators that additional associated communication logs may be searched in an expanded search. This capability is useful, for example, in family mailbox scenarios where individual family members have private mailboxes, but share the use of a common residential telephone number.

A sixth level of reusability is assigned to addresses which temporarily fail. Delivery status notification messages and failed call attempts may demote the reusability level of an address so that it is only found in an expanded search. As communication addresses are monitored, valid addresses are reassigned to the highest reusability level observed. "Last Date" and "Use Count" fields are updated on each use of an address.

A seventh level of reusability is assigned to incomplete entries. These may be phone numbers without names and with or without voice tags. They may also be e-mail addresses without names or where the name field contained a string which included the symbol @ indicating that an address was used in place of the name. Incomplete entries are excluded from name searches, however they are included in the communications log so that they may be promoted to administered entries by supplying a text name as part of an infrequent communications log administration activity.

As an eighth category, certain name and address pairs may be considered invalid. Invalid name and address pairs include names associated with telephone numbers for trunk lines, rather than telephone numbers associated with the extension of the named party, or e-mail addresses from bulk mailers. Although invalid name and address pairs are not considered reusable, it is valuable to retain such pairs in the communications log 126. This is because such name and address pairs can prevent further invalid entries from being considered, for example, received entries, and used to send a message to an incorrect address. Similarly, the recognition of invalid entries can prevent the system from automatically removing or altering valid name and address pairs.

With reference now to Fig. 4, entries in a communications log 126 according to an embodiment of the present invention may generally include maintenance items 402, and name and address pairs 404. Generally, for each maintenance item 402 there is a corresponding name and address pair 404. The maintenance items 402 may include the reusability level 406 assigned to the name and address pair, the date 408 on which it was last entered in the communications log 126, and the use count 409, which is the number of times the address has been used by the subscriber. The listing of name and address pairs 404 may conveniently be subdivided into name tags 410, alternate name tags 412, scenario classifications 413, addresses 414, and optional voice tags 415. The name tag 410 is generally the formal name associated with a particular address. The alternate name tag 412 may be used by the subscriber to assign a shorthand or alternate name with which to identify a particular address. The voice tag 415 is a voice recording associated with an address that may be spoken and recorded by the subscriber who is using only a telephone handset. The voice tag captures the name that should later be transcribed into the name tag or alternate tag. The voice tag is also useful as a confirmation played to the subscriber whenever this name and address pair is selected. The scenario classification 413 column indicates the supported

communication method or methods associated with a given address, and the address 414 column includes the addressing information, for example the telephone number or e-mail address, associated with the name tag.

Generally, when accessing the unified communications server 100 from a telephone 110 or 112, the subscriber may select a name from the communications log 126 by querying the log 126 using any one of a variety of methods. For example, the subscriber may use known touch tone name dialing techniques. Accordingly, as is well-known in the art, the subscriber may begin to spell the name of the person to which a message or telephone call is to be addressed using the key pad of a telephone 110 or 112. The name entered may be either the name tag 410 or the alternate name tag 412, if available. Alternatively, the subscriber may say the name of the person to which the message is to be addressed or the telephone call made. As is well known in the art, the use of such voice addressing requires that phoneme strings be created for each name tag 410, alternate name tag 412 for which voice addressing is to be available.

In order to address a message or place a call using the system of the present invention, a subscriber typically must access the unified communications server 100. This may be accomplished by, for example, placing a telephone call to the unified communications server 100 from the subscriber telephone 110, or from some other telephone 112. Access may be established by telephoning the unified communications server 100 directly, or, for example, when the subscriber telephone 110 is used, by an automated connection to the unified communications server 100 through, for example, a switch 108 having advanced intelligence. The server 100 may also allow a subscriber to access his or her communications log 126 from a computer 132 interconnected to the server 100 over a computer network link 118. After communication with the unified communications server 100 is established, the subscriber may perform various actions in connection with the communications log 126. When messages or calls are to be directed to a recipient, the subscriber may choose the name of a recipient, and thereby address the communication, using touch tone dialing or voice addressing as described above. Because the communications log 126 will typically contain multiple addresses associated with each name tag corresponding to multiple scenario types, a choice must be made as to which address 414 is appropriate for a given communication. This determination may be made in a variety of ways.

In certain instances, the appropriate address 414 for a communication can be determined from the context in which the addressing selection is made. For example, where an in-progress telephone call is to be transferred to another telephone number, it is apparent from the context of the addressing request that a voice telephone number is the appropriate address 414. Similarly, where an e- **mail** message is to be forwarded to a **recipient** , the system can assume that the appropriate address 414 is an electronic messaging address. Where the appropriate address can be determined from the context of the addressing request, no further intervention is required by the subscriber.

The designation of the appropriate address 414 may also be made by the subscriber explicitly. Thus, the subscriber may issue a voice addressing command such as "call Charles Brown." In the given example, the subscriber has explicitly instructed the system to place a telephone call to Charles Brown. Accordingly, the system will choose the name and address pair 404 having the name tag 410 "Charles Brown", the scenario type 413 "voice", and the address 414 "303-234-5678." As a further example, the subscriber may issue the command "message Charlie." According to this example, the name and address pair 404 having the alternate name tag 412 "Charlie", the scenario type 413 "message", and an address 414 associated with a messaging scenario, here "cbrown @acme.com" is selected for addressing the communication.

The system may also provide the subscriber with prompts to disambiguate the desired messaging scenario. For example, the system may prompt "press 1 for voice call and 2 for message." The appropriate input by the subscriber in response to such a prompt, in combination with the selection of a name tag 410 oralternate name tag 412, will associate the proper name and address pair 404 with the butgoing communication.

When a subscriber issues a voice command or commences name dialing, the system may search the communications log 126 in a way that minimizes the need for the subscriber to disambiguate similar or matching name tags 410 or alternate name tags 412. Accordingly, the present invention performs a focused search among often used name and address pairs 404 to offer first the address most likely to be reused in an outgoing communication. If additional entries might match the request, the subscriber is offered alternate choices requiring additional input to disambiguate the desired recipient. If the requested name tag 410 or alternate name tag 412 is not returned after searching the administered and received names 404, the search may be expanded to include additional levels of name and address pairs 404. Additionally, the search may initially return only the highest priority name and address pair 414 associated with a specified name, with additional matched names being offered as alternate choices according to first their reusability level, and then according to their use count 409.

Occasionally the subscriber may determine that an address in the log is not valid or is no longer valid. The subscriber may then mark such an address as invalid and it remains in the log, unable to have its reusability level promoted automatically. The inclusion of invalid name and address pairs in the communications log 126 is useful in maintaining a list of usable addresses in the communications log 126. Some numbers and addresses should never be used in return call or reply scenarios. For example, a call from a pay phone, or a call placed from an enterprise having a private branch exchange (PBX), where the originating telephone number returned by a caller ID system may not reflect the number and extension required to return a call back into the PBX. Numbers such as these should be retained in the communications log 126, but marked invalid. They should never be returned by a name query. Additionally, these addresses may not have their reusability level promoted automatically. If the address is ever seen again by the unified communications server 100 it will be recognized as invalid, and it will not be added again to the communications log 126 as a possible useable address.

According to one embodiment of the present invention, the reusability level 406 associated with a particular name and address pair 404 reflects the highest level attained by the name and address pair. The use count 409 is incremented each time that a particular name and address pair 404 is used by the subscriber. Generally, only a focused search, which returns entries having a reusability level of 1 (administered) or 2 (asserted) is conducted. If a focused search does not return any name and address pairs 404, or if the search does not return the desired name and address pair 404, the search may be expanded. An expanded search may include levels 3-6. Levels 7 and 8 are never returned in response to a search, as reusability levels 7 and 8 are used to identify incomplete entries or entries that have resulted in failed attempts to address communications or that are obsolete. Where multiple matches within a reusability level 406 are returned to a subscriber following a search, they are ordered according to the use count 409 from the most to the least commonly used. The communications log 126 may be administered by the subscriber, to promote any entry in the log 126 to a type 1 administered entry or to demote any entry to a type 8 obsolete entry. The subscriber may also delete entries from the communications log 126.

The communications log 126 may, at the option of the subscriber, be

divided into subgroups. For example, the subscriber may maintain a first list containing business-related name and address pairs 404, and a second list containing name and address pairs 404 associated with family members and friends. Additionally, the communications log 126 may be available to a subscriber from a plurality of telephone numbers or messaging addresses. For example, a subscriber may maintain the same communications log 126 for use with respect to a home telephone, a business telephone number, a facsimile number, a wireless telephone, and one or more e-mail addresses.

Although the description given above has generally been described in terms of voice telephone numbers and e-mail addresses, it should be understood that the present invention is not so limited. For example, the invention is equally useful in connection with facsimile numbers. The invention may also be used in connection with pager addresses, and with instant messaging address protocols. In general, any form of electronic communication may be used in connection with the present invention.

The foregoing discussion of the invention has been presented for purposes of illustration and description. Further, the description is not intended to limit the invention to the form disclosed herein. Consequently, variations and modifications commensurate with the above teachings, within the skill and knowledge of the relevant art, are within the scope of the present invention. The embodiments described hereinabove are further intended to explain the best mode presently known of practicing the invention and to enable others skilled in the art to utilize the invention in such or in other embodiments and with various modifications required by their particular application or use of the invention. It is intended that the appended claims be construed to include alternative embodiments to the extent permitted by the prior art.

CLAIMS EP 1175075 A2

1. A method of creating a directory of addresses having a plurality of formats for use with a unified communications system, comprising:
simultaneously monitoring a plurality of communications channels for an incoming or outgoing communication;
collecting an address associated with a communication on at least a one of said channels; collecting a name associated with said communication on at least a one of said channels; pairing said address with said name to create a name and address pair; and
storing said name and address pair in a communications log.
2. The method of Claim 1, wherein said step of collecting an address associated with a communication comprises collecting an address from an incoming communication.
3. The method of Claim 1, wherein said step of collecting an address associated with a communication comprises collecting an address from an outgoing communication.
4. The method of Claim 1, further comprising:

assigning a confidence level to said name and address pair.
5. The method of Claim 1, wherein said step of collecting an address associated with a communication comprises accessing addressing information formatted according to a predefined specification.
6. The method of Claim 5, wherein said predefined specification is the vCard(TM) specification.
7. The method of Claim 1, wherein said address is selected from the group consisting of a telephone number, a facsimile number, a pager number, an e-mail address, a computer network address, and an Internet address.
8. The method of Claim 1, further comprising receiving input from a user, wherein said input comprises a name to which an outgoing communication is directed and a method by which said message is to be

delivered; and

addressing said outgoing communication.

9. The method of Claim 1, further comprising:
receiving an addressee name and communication type selection from a user;
searching said communications log for an address corresponding to said addressee name and said received communication type; and
associating said corresponding address with a communication to be sent.

10. The method of Claim 1, wherein said step of collecting an address associated with a communication on at least a one of said channels comprises recording at least one of caller-ID information, SS7 call control information, ISDN call control information and proprietary PBX control link information.

11. The method of Claim 1, wherein said step of collecting an address associated with a communication on at least a one of said channels comprises querying a system database.

12. The method of Claim 1, wherein said step of collecting an address associated with a communication on at least a one of said channels comprises parsing a name and address from header information associated with an electronic message.

13. The method of Claim 1, wherein said step of collecting an address associated with a communication on at least a one of said channels comprises recording a dialed telephone number and querying a telephone system database.

14. The method of Claim 1, further comprising returning one or more of said name and address pairs stored in said communications log in response to a query by a user.

15. The method of Claim 14, further comprising addressing an outgoing communication using at least a one of said returned name and address pairs.

16. The method of Claim 1, wherein said step of collecting an address associated with a communication on a least one of said channels comprises:
receiving a name that is not stored in said communications log;
collecting from a user an address for said name that is not stored in said communications log;
prompting said user to enter a voice tag; and
storing said voice tag and said address in said communications log.

17. The method of Claim 16, further comprising:
receiving a text name from said user;
associating said text name with said address; and
storing said text name in said communications log, wherein said address can be accessed by said user.

18. Apparatus for performing the method steps set forth in Claim 1.

19. A messaging system serving a plurality of communications channels, comprising:
a monitor for monitoring said plurality of communications channels to determine when a communication is being sent or received on at least a one of said communications channels;
an address collector in communication with said monitor for collecting an address associated with said communication;
a name identifier for associating the collected addresses with a name and creating name and address pairs;
a directory for containing said name and address pairs; and
a user input to allow a user to select a one of said name and address pairs.

20. The system of Claim 19, wherein said plurality of communications channels comprise at least one of a telephone line, a facsimile line, and a computer network.

21. An apparatus for automatically compiling a directory of addresses, comprising:
a unified messaging system;
means for collecting an address associated with a communication;
means for automatically associating said collected address with a corresponding name;
means for storing said collected address and said corresponding name in a directory;
user input means for allowing a user to select a name; and
means for attaching an address associated with said selected name to an outgoing communication.

22. The apparatus of Claim 21 wherein said collected address comprises at least a one of a telephone number, a facsimile number, a pager number, an e-mail address, a computer network address and an Internet address.

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mail consent process, to be finalized by a signed written consent form. Further, policymakers, physicians and patients should recognize that transcripts of electronic medical communications become part of patients' medical records, and therefore deserve the privacy and confidentiality protections afforded to all medical records. Without these assurances, online medical practice would be exempt from the patient safeguards afforded to patients in otherwise "real" interactions. Legal and ethical guidelines must not allow physicians to circumvent these patient rights in virtual medical communications. Only by enforcing the same standards throughout medical practice, regardless of the communication medium, can patients be assured that privacy, confidentiality and informed decision making are, in fact, real protections within the patient-physician relationship.

(1) See generally Alissa R. Spielberg, On Call and Online: Sociohistorical, Legal, and Ethical Implications of E-Mail for the Patient-Physician Relationship, 280 JAMA 1353 (1998) (discussing the present and future impact of electronic mail (e-mail) on the traditional patient-physician relationship).

(2) See Esther B. Fein, For Many Physicians, E-Mail Is the High-Tech House Call, N.Y. TIMES, Nov. 20, 1997, at Al.

(3) STANLEY JOEL REISER, MEDICINE AND THE REIGN OF TECHNOLOGY 196 (1978).

(4) See id.

(5) See id.

(6) See id.

(7) See id. at 198.

(8) See Spielberg, supra note 1, at 1354.

(9) See id.

(10) See id.

(11) See CLAUDE S. FISCHER, AMERICA CALLING: A SOCIAL HISTORY OF THE TELEPHONE TO 1940 176 (1992).

(12) See Paul Start, Smart Technology, Stunted Policy: Developing Health Information Networks, HEALTH AFF., May-June 1997, at 91, 92.

(13) See id. at 94. One of the pioneers was the Harvard Community Health Plan. See id.

(14) See id.

(15) See id.

(16) Id.

(17) See id.

(18) See id.

(19) See Lee Green, a Better Way to Keep in Touch with Patients, MED. ECON., Oct. 28, 1996, at 153, available in 1996 WL 9421679 (noting that some patients now ask doctors for prescription refills via e-mail).

(20) See Start, supra note 12, at 94.

(21) See id.

(22) See id. at 95.

(23) See Green, supra note 19, at 153.

(24) See Bartley L. Barefoot, Enacting a Health Information Confidentiality Law: Can Congress Beat the Deadline?, 77 N.C.L. REV. 283,286-87 (1998).

(25) See Kathleen Doheny, Digital Docs: More Patients and Physicians Are Using E-mail to Discuss Routine Medical Matters, L.A. TIMES, Nov. 23, 1998, at S1; see also Richard Saltus, Take Two Aspirin and E-Mail Me in the Morning, BOSTON GLOBE MAG., Jan. 18, 1998, at 11 (noting that the present concerns over the use of "e-mail medicine" are slowly eroding); Christine Gorman, E-Mail Your Doctor; Frustrated By Phone Tag? Join the Growing Ranks of Doctors and Patients Talking Through the Net, TIME, Aug. 17, 1998, at 82 (commenting on e-mail's ability to increase communication between physicians and patients).

(26) See generally Tom Ferguson, Digital Doctoring--Opportunities and Challenges in Electronic Patient-Physician Communication, 280 JAMA 1361 (1998) (noting that many patients who use online services express interest in communicating with their physicians by e-mail); Jamie Talan, On the Net, Be Wary of What Dr. Orders, NEWSDAY, Oct. 21, 1998, at A9, available in LEXIS, NY Library, NEWSDY File (suggesting that patients may enjoy direct communication with the physicians via email).

(27) See Ferguson, supra note 26, at 1361.

(28) See David J. Brailer & Tiffany S. Hackett, Points [& Clicks] on Quality, HOSP. & HEALTH NETWORKS, Nov. 20, 1997, at 32, 32.

(29) See, e.g., Stephen M. Borowitz & Jeremy C. Wyatt, The Origin, Content, and Workload of Email Consultations, 280 JAMA 1321 (1998); Christine Gorman, Ask a Cyberdoc: Need a Fast Answer to a

Medical Question? AOL Now Lets you Talk to Physicians For Free, TIME, Nov. 16, 1998, at 128.

(30) See, e.g., Jan Greene, Sign On and Say `Ah-h-h-h-h', HOSP. & HEALTH NETWORKS, Apr. 20, 1997, at 45, 45; Gary Baldwin, Web Doc--Pushing the Electronic Envelope: Physicians and Patients Connect Over the Internet, AM. MED. NEWS, July 27, 1998, at 19 [hereinafter Web Doc]; Aaron Zitner, Cybermedicine Seen As Unhealthy By Some, BOSTON GLOBE, Aug. 6, 1998, at C1; Gary Baldwin, Web Rx--When It Comes to Prescribing Via the Internet, There's a Cyberclash Brewing, AM. MED. NEWS, Aug. 3, 1998, at 22.

(31) See, e.g., Web Doc, supra note 30, at 26; Marie C. Sanchez, Top Doctors Can Be There in a Heartbeat, BOSTON GLOBE, July 30, 1998, at B1.

(32) See WHITFIELD DIFFIE & SUSAN LANDAU, PRIVACY ON THE LINE: THE POLITICS OF WIRETAPPING AND ENCRYPTION 12 (1998).

(33) See id.

(34) See id.

(35) See id. at 227.

(36) See Suruchi Mohan, E-mail Security Ignored, COMPUTERWORLD, Sept. 25, 1995, at 53, 67 (comparing use of unencrypted e-mail to "sending an important message on a postcard").

(37) See BARRY R. FURROW ET AL., HEALTH LAW [subsections] 4-29, at 139-40 (1995).

(38) See id.

(39) See id. [sections] 4-30, at 141.

(40) See MASS. GEN. LAWS. ANN. ch. 231, [sections] 60B (West 1998); see also ARIZ. REV. STAT. ANN. [sections] 12-2291(4) (West 1998) (stating that medical records consist of "all communications that are recorded in any form or medium and that are maintained for purpose of patient treatment...."); GA. CODE ANN. [sections] 24-10-70(2) (1998) (defining a "medical record" as "all written clinical information which relates to treatment of individuals when such information is kept in an institution"); HAW. REV. STAT. [sections] 622-51 (Michie 1998) (broadly defining medical records as simply the patient records "kept by a medical facility").

(41) See, e.g., 215 ILL. COMP. STAT. ANN. 5/1003(R) (West 1998) (defining medical record information as "personal information which ... relates to an individual's physical or mental condition, medical history or medical treatment"). An American Bar Association monograph notes that medical "records" or "documents" may be defined quite broadly in discovery requests. See Karen S. Guarino,

Developing a Comprehensive Records Management and Retention Policy, in HEALTH CARE FACILITY RECORDS: CONFIDENTIALITY, COMPUTERIZATION AND SOCIETY 1, 3 (Forum on Health Law of the American Bar Ass'n ed., 1995). For example,

> "Document" means any typed, printed, handwritten, recorded, or graphic matter, and all non-identical copies of each such matter ... including, hut not limited to ... agreements, analyses, briefs, calendars, charts, computer records, contracts, correspondence, diaries, letters, logs, memoranda, messages, minutes of meetings, ... reports, studies, tapes, telecopies, telegrams, telephone messages, records, videotapes, and writings of any kind of description, including drafts, regardless of origin, whether sent or received ... in whatever form....

Id. at 9 n.2.

(42) See FURROW ET AL., supra note 37, [sections] 4-30, at 141.

(43) See Failure to Document Telephone Calls Can Lead to Serious Injuries and Malpractice Claims, 39 ALA. MED. 14, 14 (1997).

(44) JOINT COMMISSION ON ACCREDITATION OF HEALTHCARE ORGANIZATIONS, COMPREHENSIVE ACCREDITATION MANUAL FOR HOSPITALS Standards IM.7.2 (1998) [hereinafter JCAHO MANUAL].

(45) See CAL. HEALTH & SAFETY CODE [sections] 1457(a) (West 1998); N.Y. PUB. HEALTH LAW [sections] 3370 (McKinney 1998).

(46) See Guarino, supra note 41, at 7 (surveying state, federal and Joint Commission on Accreditation of Healthcare Organization's (JCAHO) requirements). JCAHO certification for health care institutions, for example, requires retention of accurate and up-to-date medical records. See JCAHO MANUAL, supra note 44, Standards IM.7.2. In addition to the JCAHO requirements, Medicare also requires that providers maintain records for reimbursement purposes. See Guarino, supra note 41, at 5-7 (citing HEALTH CARE FINANCING ADMINISTRATION, PUB. 15-1, PROVIDER REIMBURSEMENT MANUAL PART I [subsections] 2304-2304.01 (1999)). Moreover, hospitals must retain records for at least five years as a condition of participation in the Medicare program. See id. at 6 (citing 42 C.F.R. [sections] 482.24(b)(1) (1999); HEALTH CARE FINANCING ADMINISTRATION, PUB. 10, PROVIDER REIMBURSEMENT MANUAL PART I [sections] 413(C) (1999)).

(47) See FURROW ET AL., supra note 37, [sections] 4-30, at 140 (citing Thomas v. United States, 660 F. Supp. 216 (D.D.C. 1987)).

(48) See Terri Finkbine Arnold, Let Technology Counteract Technology: Protecting the Medical Record in the Computer Age, 15 HASTINGS COMM. & ENT. L.J. 455,470 (1993).

(49) See id.

(50) See id.

(51) See id. However, "information protected by the doctor-patient relationship does not lose its confidentiality by incorporating it into

the computer record." Id. at n.81 (citing Rudnick v. Superior Ct. of Kern County, 523 P.2d 643 (Cal. 1974)).

(52) Paper chart refers to the collection of medical information that is retained by a practitioner or hospital in a physical file rather than stored electronically. See Veling W. Tsai, Cheaper and Better: The Congressional Administrative Simplification Mandate Facilitates the Transition to Electronic Medical Records, 19 J. LEGAL MED. 549, 558-59 (1998); see also NATIONAL RESEARCH COUNCIL, FOR THE RECORD: PROTECTING ELECTRONIC HEALTH INFORMATION 26 (1997) (comparing paper and electronic records).

(53) See KATHRYN MONTGOMERY HUNTER, DOCTORS' STORIES: THE NARRATIVE STRUCTURE OF MEDICAL KNOWLEDGE 162 (1991) (stating that case history is not the patient's story). It is important to note that even when the patient's "own words" do appear in chart notes, they are only those words that the practitioner, who is making the notes, chooses to include. Patients do not routinely have an opportunity to have their personal accounts directly entered into the charts without the intervention of an intermediary such as a health care practitioner.

(54) See id. at 162, 166.

(55) As Kathryn Montgomery Hunter notes:

> Case narrative is tolerated grudgingly in medicine because it enables clinicians to describe the nonlinear, subjective, and uncertain aspects of their experimental field. But, as the profession's prohibition against anecdotes recognizes, narrative that bursts the generic constraints of the strict case history, especially narrative of any length and fullness or speculative force, inevitably pulls against medicine's commitment to the objective, scientific study of human illness. The medical case history is, after all, a history: a narrative that attempts both to control the subjectivity of the observer-narrator and to stabilize and evaluate the encapsulated narrative of the patient who is its object.

Id. at 166.

(56) See id. at 5-6. Hunter argues that "physicians are like literary critics, who ... arrive at the text [here, the patient] laden with theory, assumptions, hypotheses." Id. at 8.

(57) See id. at 84-85. These "other" medical personnel include medical students, nurses, therapists and social workers. See id.; see also Barefoot, supra note 24, at 285 (stating that medical records often include impressions of nurses as well as other caregivers).

(58) For example, "[t]he contents of the patient record are not limited ... to objective test data or information provided by the patient. Medical records also frequently contain impressions of doctors and nurses, including assessments of a patient's character, personality, and mental state." Barefoot, supra note 24, at 285.

(59) Mark Berg, Practices of Reading and Writing: The Constitutive Role of the Patient Record in Medical Work, 18 SOCIOLOGY OF HEALTH & ILLNESS 499, 501 (1996).

(60) See HUNTER, supra note 53, at 128. Hunter contends that:

> [a]s a part of the care provided by a physician, a respectful, impersonal attention is important to the therapeutic relationship. It can imply a recognition that the sufferer is more or other than patienthood presents to view. The person who is ill seeks help, in part, for the sake of the physician's discriminating but nonjudgmental interpretation.

Id. at 133.

(61) See Maurice Willis et al., Documenting the Clinical Encounter, in TELEMEDICINE: PRACTICING IN THE INFORMATION AGE 175, 176 (Steven F. Viegas & Kim Dunn eds. 1998) (noting that "healthcare workers documenting a clinical encounter use the same phrases from day to day and follow a general standard").

(62) See id. The form of progress notes is strictly defined. The "SOAP" format is the practice standard: subjective--usually a quotation, selected by the health care worker, from the patient; objective--the physical exam; assessment--where the physician diagnoses and assesses the patient's symptoms; and plan--what treatment options the physician should follow. See id.

(63) See generally Lawrence O. Gostin, Health Information Privacy, 80 CORNELL L. REV. 451 (1995) (stating that a comprehensive health information system is technologically feasible and would be socially beneficial).

(64) See Willis et al., supra note 61, at 176-77.

(65) See Beverly Kane & Daniel Z. Sands, Guidelines for the Clinical Use of Electronic Mail with Patients, 5 J. AM. MED. INFORMATICS ASS'N, 104, 105 (1998).

(66) Clearly, additional documentation of any diagnostic, prescriptive or consultative interaction between a practitioner and a patient may be relevant in future treatment decisions.

(67) See Spielberg, supra note 1, at 1357; Kane & Sands, supra note 65, at 106.

(68) See Spielberg, supra note 1, at 1357.

(69) See id. Moreover, despite the often cavalier attitude toward e-mail communication, medical e-mail represents a lasting record of physician judgment and patient response and reporting of symptoms. Accordingly, e-mails sent in a medical relationship, or generally in the course of medical treatment, should be drafted with care, composed as a formal written document on a professional letterhead. Furthermore, as a precaution, the patient's preferred method of communication should be noted in the medical record, along with relevant telephone numbers and e-mail addresses that the patient has specifically endorsed for use by health care practitioners for medical purposes.

(70) For example, a patient may be uncomfortable conducting candid

e-mail conversations with her gynecologist if she knew that her ophthalmologist would be able to access those e-mails.

(71) Policymakers and legislators have proposed this kind of suggestion to protect medical information from being viewed by insurers. For example, one congressional bill that failed to pass in the 105th Congress would require medical record-holders "to segregate and maintain identifiable information designated by the patient, other than billing data, outside of any computerized networked system." Barefoot, supra note 24, at 352 (citing S. 1368, 105th Cong. [sections] 202(f) (1997)).

(72) See, e.g., MASS. GEN. LAWS ANN. ch. 175, [sections] 47B(c) (West 1998). Section 47(B)(c) prevents payers of health care services from obtaining details about a patient's psychiatric condition prior to allowing mental health benefits (at least up to a statutory ceiling of $500, after which the payer may request further information before approving future treatment). See id. Because several Massachusetts health plans routinely stored comprehensive psychiatric notes (including updates on individual therapy sessions) in an electronic record, enabling any health plan employee to view their contents, the Massachusetts legislature enacted this psychiatric record "privacy" provision. See Deborah Pergament, Note, Internet Psychotherapy: Current Status and Future Regulation, 8 HEALTH MATRIX 233, 277 (1998). With psychiatric records maintained in a separate electronic file, only specifically recognized personnel would be able to examine these intimate records.

(73) Cf. Jerry Kang, Information Privacy in Cyberspace Transactions, 50 STAN. L. REV. 1193, 1249-50 (1998) (discussing the concept of a "functionally necessary use" of personal information by which access is granted on a "need-only basis to complete the transaction in which the information was originally collected").

(74) See id.; see also Spielberg, supra 1, at 1357 (advising physicians to guard against unauthorized use of patient e-mails and to secure the patients' consent before forwarding e-mail messages to their colleagues).

(75) This is similar to how a patient's words are treated in an office visit (or over the telephone) in which the patient's words are summarized by the health care provider. The actual e-mail would still be retained, however.

(76) See Gostin, supra note 63, at 455; see also Arnold, supra note 48, at 457 (arguing that "confidentiality of the computerized medical record is not yet adequately protected"); Grace-Marie Mowery, Comment, A Patient's Right of Privacy in Computerized Pharmacy Records, 66 U. GIN. L. REV. 697, 701 (1998) (discussing uncertain legal requirements in maintaining patient privacy in pharmaceutical records); Robert Gellman, Does Privacy Law Work?, in TECHNOLOGY AND PRIVACY: THE NEW LANDSCAPE 193, 204-07 (Philip E. Agre & Marc Rotenberg eds., 1997) (describing ambiguous legal standards for the constitutional protection of personal information privacy).

(77) See Gostin, supra note 63, at 489.

(78) See id. at 485.

(79) See Barefoot, supra note 24, at 309-10.

(80) In his concurrence to Roe v. Wade, Justice Douglas asserted that "the right of privacy has no more conspicuous place than in the physician-patient relationship." See Doe v. Bolton, 410 U.S. 209, 219 (1973) (Douglas, J., concurring) (concurrence opinion applicable to Roe v. Wade, 410 U.S. 113 (1973)).

(81) See Ken Gormley, One Hundred Years of Privacy, WIS. L. REV. 1335, 1337-39 (1992).

(82) See id. at 1339; see also JUDITH WAGNER DECEW, IN PURSUIT OF PRIVACY: LAW, ETHICS, AND THE RISE OF TECHNOLOGY 66 (1997) (noting the "close relationship between tort, Fourth Amendment, and constitutional privacy claims" which supports arguments for a "broad conception of privacy"). Ken Gormley specifically questions the utility of these demarcations, arguing that "[s]uch a sharp division is unfortunate ... because history confirms that the various offshoots of privacy are deeply intertwined at the roots, owing their origins to the same soil." Gormley, supra note 81, at 1357. Further, Gormley contends:

> Although helpful in refining our understanding of various subsets of privacy opinions and case law, single one-size-fits-all definitions of privacy have proven to be of limited value. The harsh reality is: legal privacy consists of four or five different species of legal rights which are quite different from each other and thus incapable of a single definition, yet heavily interrelated as a matter of history, such that efforts to completely sever one from another are (and have been) disastrous.

Id. at 1339.

(83) See Gormley, supra note 81, at 1337.

(84) See Samuel D. Warren & Louis D. Brandeis, The Right to Privacy, 4 HARV. L. REV. 193, 193 (1890).

(85) Id. at 198.

(86) See Gormley, supra note 81, at 1348-55.

(87) 381 U.S. 479 (1965).

(88) See id. at 485.

(89) See id. at 485-86.

(90) See, e.g., Olmstead v. United States, 277 U.S. 438 (1928) (holding that evidence obtained by intercepting a telephone call was admissible).

(91) See Spielberg, supra note 1, at 1354.

(92) See Gormley, supra note 81, at 1356.

(93) See Katz v. United States, 389 U.S. 347, 358-59 (1967).

(94) Simon G. Davies, Re-Engineering the Right to Privacy: How Privacy Has Been Transformed from a Right to a Commodity, in TECHNOLOGY AND PRIVACY: THE NEW LANDSCAPE 143, 143 (Philip E. Agre & Marc Rotenberg eds., 1997).

(95) 410 U.S. 113 (1973).

(96) See George J. Annas et al., The Right to Privacy Protects the Doctor-Patient Relationship, 263 JAMA 858, 858-59 (1990).

(97) See id. at 859.

(98) See Gostin, supra note 63, at 498; see also Alberts v. Devine, 479 N.E.2d 113, 120 (Mass. 1985) (holding that "a duty of confidentiality arises from the physician-patient relationship"); Hague v. Williams, 181 A.2d 345,349 (N.J. 1962) (same).

(99) Absent novel legislative enactments to protect medical privacy, such a constitutional argument could be asserted by drawing from the underlying reasoning from both the "information" and "decisionmaking" privacy cases. Indeed, 1 would argue that medical communications and their preserved records--including e-mail--represent the intersection between these two artificially separated "types" of privacy, because medical communication is itself the process of engaging in medical decision making and its stored record becomes information about which individuals can logically assert a privacy interest.

(100) See Annas et al., supra note 96, at 859.

(101) See, e.g., Whalen v. Roe, 429 U.S. 589 (1977) (overruling lower court's holding that a New York statute requiring state authorities be provided with copies of every prescription for certain drugs, which will be kept in a computerized database, was unconstitutional).

(102) MARTIN CAMPBELL-KELLY & WILLIAM ASPRAY, COMPUTER: A HISTORY OF THE INFORMATION MACHINE 247 (Basic Books, 1996).

(103) See Whalen, 429 U.S. at 599-604.

(104) See id. at 593-94.

(105) See id. at 598-99.

(106) See id. at 600-02.

(107) See id. at 605.

(108) See id.

(109) See id. at 599-604.

(110) See id. at 594, 603-04. However, the Court's dicta suggests that states have a duty, "arguably ... root[ed] in the Constitution," to prevent unnecessary disclosure of individuals' health data collected for public health purposes. See id. at 605.

(111) See Spielberg, supra note 1, at 1355-56; see also Kane & Sands, supra note 65, at 108-09 (listing specific practical precautions for practitioners to take, such as using encryption technology and obtaining consent before utilizing e-mail to communicate with patients).

(112) See Spielberg, supra note 1, at 1357.

(113) Whalen, 429 U.S. at 602.

(114) Id. at 594.

(115) See Spielberg, supra note 1, at 1358.

(116) 429 U.S. at 602-03. Similarly, people also may refrain from making certain decisions about their health care over e-mail because they fear that their e-mails could be misdirected, thus revealing their personal thought processes to unforeseen individuals.

(117) See Spielberg, supra note 1, at 1357.

(118) 500 U.S. 173 (1991).

(119) Id. at 218 (Blackmun, J., dissenting).

(120) See Gormley, supra note 81, at 1439-40; Jerome P. Kassirer, The Next Transformation in the Delivery of Health Care, 332 NEW ENG. J. MED. 52, 53 (1995).

(121) Gormley, supra note 81, at 1440.

(122) Indeed, Justice Brennan, in his concurring opinion in Whalen, directly acknowledged the potential for reexamination of privacy and medical databases in the event that new technological changes appear to efface health information privacy:

> [C]ollection and storage of data by the State that is in itself legitimate is not simply rendered unconstitutional simply because new technology makes the State's operations more efficient. However ... the Constitution puts limits not only on the type of information the State may gather, but also on the means it may use to gather it. The central storage and easy accessibility of computerized data vastly increase the potential for abuse of that information, and I am not prepared to say that future developments will not demonstrate the necessity of some curb on such technology.

Whalen v. Roe, 429 U.S. 589, 606-07 (1977) (Brennan J., concurring) (emphasis added).

(123) See Gostin, supra note 63, at 498.

(124) See id. at 494-95.

(125) See id. at 506-11.

(126) See id. at 508-09.

(127) See id. at 510-13.

(128) See, e.g., ARK. CODE ANN. [sections] 23-76129 (Michie 1997) (requiring health maintenance organizations (HMOs) to hold medical information confidential); N.Y. CIV. RIGHTS LAW 50-52 (McKinney 1998) (protecting various individual privacy rights and providing private rights of action); N.Y. PuB. HEALTH LAW [sections] 2803-c(3) (f) (McKinney 1998) (providing for the confidentiality of hospital patients' medical records); CAL. CIV. CODE [sub sections] 56.10-.30 (West 1998) (protecting medical information from general public exposure, but allowing some information disclosure for public health purposes); CAL. CIV. CODE [sections] 1798.1 (West 1998) (providing that privacy is a fundamental right).

(129) See Gostin, supra note 63, at 516-17.

(130) In addition to the general information privacy statutes enacted at the federal level, several specific areas have been identified for special privacy protections. For example, Congress explicitly protects certain aspects of an individual's credit history in the Fair Credit Reporting Act of 1970, which prescribes acceptable uses for that information and enables review and correction by its subject. See 15 U.S.C. [sections] 1681 (1998). Further, the Video Privacy Act of 1988 prohibits disclosure of information pertaining to videotape rentals except in certain circumstances. See 18 U.S.C. 2710 (1998). Likewise, the Telephone Consumer Protection Act of 1991 regulates unsolicited telephone calls and provides privacy protection for telephone users who would prefer not to receive such calls. See 47 U.S.C. [sections] 227 (1998).

(131) Pub. L. No. 99-508, 100 Stat. 1848 (1986) (codified as amended in scattered sections of 18 U.S.C.).

(132) See Maureen S. Dorney, Privacy and the Internet, 19 HASTINGS COMM. & ENT. L.J. 635, 644 (1997).

(133) See [sub sections] 101,201,100 Stat. at 1848, 1860-68.

(134) See Spielberg, supra note 1, at 1355-56. Even though the Electronic Communications Privacy Act of 1986 (ECPA) bolsters the technological security of the message, so that the sender can expect a private, uninterrupted transmission of the message to a known recipient, it does not assure that the message will be properly preserved as a private communication once it is received. See Spielberg, supra note 1, at 1356; infra notes 139-140 and accompanying text. Interestingly, pharmaceutical records do not

enjoy the same kind of privacy protections under the law. See Mowery, supra note 76, at 712. While the ECPA may facilitate private transmission from physician to pharmacy, once the pharmacy receives the e-mail message, the message does not necessarily remain private; the pharmacist is under no legal duty to maintain the record as confidential. See id. at 713. Nonetheless, the physicians' copy of their already sent message (which becomes a part of the medical record) must be guarded by the physician with the same standards as any other record. See id. at 712. Thus, because the pharmacy's record itself remains unprotected under current law, gaps exist when records are transferred to those holders who owe no duty of confidentiality or privacy (beyond ethical codes) to the patient whose record is at stake.

(135) See [sub sections] 101-103,202, 100 Stat. at 1848-1854, 1860; Dorney, supra note 132, at 643-45.

(136) The ECPA, as any other law, can only deter unlawful acts, but cannot prevent them from occurring in the first place. For example, once an e-mail message has been unlawfully taken, the holder who intends to share that message freely--thus making public the victim's private information--will do so despite the existence of adverse legal consequences.

(137) See [sections] 101(c)(6), 100 Stat. at 1851. As amended by the ECPA, the relevant statutory language provides: It shall not be unlawful ... for ... an officer, employee, or agent of a provider of wire or electronic communication service ... to intercept, disclose, or use that communication in the normal course of his employment while engaged in any activity which is a necessary incident to the rendition of his service or to the protection of the rights or property of the provider of that service.... 18 U.S.C. [sections] 2511(2)(a)(i) (1998). This exception, though, does not authorize random monitoring of communication by providers of wire communication except for mechanical or service quality control checks. See id.

(138) See Dorney, supra note 132, at 644; Spielberg, supra note 1, at 1356; see also Smyth v. Pillsbury Co., 914 F. Supp. 97, 100 (E.D. Pa., 1996) (finding no privacy interest in employee's e-mail to a supervisor).

(139) See [sections] 201, 100 Stat. 1861.

(140) See id.

(141) Pub L. No. 93-579, [sections] 3, 88 Stat. 1897 (1974) (codified at 5 U.S.C. [sections] 552a (1998)).

(142) Pub. L. No. 89-487, 80 Stat. 250 (1966) (codified at 5 U.S.C. [sections] 552 (1998)).

(143) See 5 U.S.C. [sections] 552(a), (b)(l)-(9) (1998).

(144) See 5 U.S.C. [sections] 552(b)(6).

(145) See 5 U.S.C. 552a(b) (1998). The Privacy Act of 1974 prohibits federal hospitals and agencies from disclosing information contained in medical records except under specific circumstances. See id. 552a(a)(4), (b). Although the Privacy Act acknowledges that a health care provider owns the information contained within the medical chart, the patient is the only person authorized to release such information. See Douglas D. Bradham et al., The Information Superhighway and Telemedicine: Applications, Status, and Issues, 30 WAKE FOREST L. REV. 145, 161 (1995).

(146) See Arnold, supra note 48, at 475.

(147) See Gostin, supra note 63, at 499.

(148) See id. at 500.

(149) Any clinical e-mail that is relevant to rendering medical decisions ought to be retained in the medical record. Such e-mail might not, however, serve a broader function in public health practice, and thus would be irrelevant for that domain. Much of the information that would be contained as text in a medical e-mail would not be useful for public health data collection, although a summary of medical conclusions, diagnoses, drug reactions, test results and the like could prove relevant in an epidemiological assessment. To prevent inadvertent disclosure of medically related e-mails (which have personally identifiable information even in the address), additional precautions will need to be established to protect medical e-mail within the medical record.

(150) For example, an e-mail contained within a medical record would be treated as any other medical record. Because at present no federal law affords uniform privacy protection to medical records generally, see Gostin supra note 63, at 516-17, a medically related e-mail could be open to exposure to a variety of interested third parties to an underlying medical relationship. Because such authorized onlookers may have legitimate access to the medical record itself, it is unclear whether they would be treated as violators under either the Privacy Act or the ECPA.

(151) See Gostin, supra note 63, at 508; see also Estate of Behringer v. Medical Ctr. at Princeton, 592 A.2d 1250, 1274 (N.J. Super. Ct. 1991) (finding hospital negligent for failure to take reasonable precautions to maintain confidentiality of the patient's medical record when sensitive medical information was kept in a chart at a nurse's station, making the chart easily accessible to outsiders). Interestingly, the Behringer court placed the burden on the medical facility to do more than simply instruct health care workers to keep records confidential. See id. at 1272. Instead, the court suggested possible confidentiality measures that the hospital should take, such as securing medical charts, limiting access to those with a bona fide need to know or sequestering portions of the patient's record containing confidential information. See id. at 1273.

(152) See Gostin, supra note 63, at 508-09.

(153) AMERICAN MEDICAL ASS'N, CODE OF MEDICAL ETHICS: CURRENT OPINIONS WITH ANNOTATIONS Opinions 5.04-.07 (1998) [hereinafter AMA CODE]. Several exceptions to the general confidentiality principle have been identified, such as cases involving communicable diseases and a patient's articulation of an intent to commit serious harm on a particular or identifiable third party. See id. at Opinions 5.05.

(154) See id. Opinion 5.05; TOM L. BEAUCHAMP & JAMES F. CHILDRESS, PRINCIPLES OF BIOMEDICAL ETHICS 422-23 (4th ed. 1994); see also Len Doyal, Human Need and the Right of Patients to Privacy, 14 J. CONTEMP. HEALTH L. & POL'Y 1, 4 (1997) (noting that patient trust of physicians has been one of two philosophical justifications for clinical confidentiality).

(155) AMA CODE, supra note 153, Opinion 5.05 (emphases added).

(156) See Spielberg, supra note 1, at 1355.

(157) See, e.g., AMA CODE, supra note 153, Opinion 5.07 (requiring that physicians use the "utmost effort and care ... to protect the confidentiality of all medical records, including computerized medical records"). Some observers question whether the ideal confidentiality standards articulated by law or professional codes can have genuine significance in a post-modern, technology driven, computerized and commodified medical system. See BEAUCHAMP & CHILDRESS, supra note 154, at 419. If this concern manifests in the routinization of confidentiality breaches for most medical records, the ultimate harms to vulnerable patients will be potentially greater with the concurrent exposure of personal thoughts and feelings described in e-mail letters to their physicians.

(158) See Kane & Sands, supra note 65, at 106-10; Charles B. Conklin, Risk Management Ramifications of E-Mail in a Hospital (visited May 11, 1999) ; see also Spielberg, supra note 1, at 1355-56 (discussing various precautions that physicians can take to secure their e-mail communications). The AMA has likewise developed a policy regarding confidentiality of patient information stored on a computer, exhorting physicians that "It]he utmost effort and care must be taken to protect the confidentiality of all medical records, including computerized medical records." AMA CODE, supra note 153, Opinion 5.07. Opinion 5.07 also delineates some security guidelines to maintain confidentiality of medical records, including employee authorization, patient notification and consent prior to release of identifiable data and use of encryption technology. See id.

(159) AMA CODE, supra note 153, Opinion 5.07 (emphasis added).

(160) See FURROW ET AL., supra note 37, [sections] 6-11, at 270-79.

(161) See id. [sections] 6-9, at 265-66.

(162) See id. The ubiquitous "consent form" is evidence that obtaining patient consent in the health care setting has become routine. See id. [sections] 6-16, at 284. However, it is not always the case that a full and meaningful discussion precedes the patient's signing of the consent form, and many states treat the signed form as prima facie evidence of consent treatment, placing the burden on the patient to rebut the presumption. See id.

(163) See id. [sections] 4-34, at 150-51.

(164) See id.

(165) See id. at 150.

(166) See id.

(167) See id. at 150-51.

(168) See id.

(169) See Barefoot, supra note 24, at 303. Currently, the law is unable to fully acknowledge the transformation in American medicine from a doctor-patient model to a patient-health system/insurer model. See id. Many health care workers currently privy to patient records are "uncertain about their legal obligations" because only some record-holders, such as physicians and hospitals, have been identified as holding legal duties to protect the patients' medical information. See id.

(170) See id. at 283, 288; see also Mowery, supra note 76, at 713 (noting that doctor-patient testimonial privilege does not preclude employers or insurers from learning about a patient's medical information). Not surprisingly, patients are often unaware that so many others will likely view their medical records. See Barefoot, supra note 24, at 288-89. In addition to health care providers and insurers, many "secondary users" of health information may have access to an individual's records. See id. For example, employers, public health organizations, medical and social researchers, government agencies, law enforcement, educational institutions, credit bureaus, licensing organizations and the media may have access to personal records under existing laws. See id.

(171) See Gostin, supra note 63, at 487.

(172) See id. at 507. Many states do require health care providers, insurers and employers to maintain confidentiality standards. See, e.g., CAL. CIV. CODE [sub sections] 56.10, .13, .20 (West 1998); N.Y. INS. LAW [sections] 321 (Consol. 1998); N.Y. PUB. HEALTH LAW [sections] 2803-c(3)(0 (McKinney 1998).

(173) Mowery, supra note 76, at 716.

(174) See HOWARD BRODY, THE HEALER'S POWER 126-27 (1992).

(175) See id. at 126.

(176) As one commentator suggests, this kind of discussion about handling information will accomplish two things:

> First, it should help avert overly facile promises by the physician such as "Anything you say to me will be held in the strictest confidence." Possibilities for information leakage exist in almost all modern care systems, and it is only fair that the patient should know that. Second, it may give rise to specific negotiations about what should be included in the written record. In an example that is becoming commonplace, the physician may advise the patient at risk for HIV infection to be tested anonymously through the local health department instead of ordering the test through a standard laboratory and having the information become a part of the chart.

Id.

(177) See id.

(178) See id.

(179) AMA CODE, supra note 153, Opinion 5.07.

(180) See Spielberg, supra note 1, at 1356-57; Kane & Sands, supra note 65, at 106.

(181) See, e.g., Bradham et al., supra note 145, at 161-62; see Spielberg, supra note 1, at 1356.

(182) See Spielberg, supra note 1, at 1356-57.

(183) See, e.g., Linda Roemer, Letter to the Editor (JAMA) 1 (Feb. 13, 1999) (on file with author).

(184) See Alissa Spielberg, Response to Gurwitz and Roemer, Letter to the Editor (JAMA) I (Mar. 9, 1999) (on file with author).

(185) See id.

(186) See Spielberg, supra note 1, at 1353.

(187) UNITED STATES DEP'T OF COMMERCE, TELEMEDICINE REPORT TO CONGRESS (visited Apr. 3, 1999) [hereinafter TELEMEDICINE REPORT].

(188) COMMITTEE ON EVALUATING CLINICAL APPLICATIONS OF TELEMEDICINE, INST. OF MED., TELEMEDICINE: A GUIDE TO ASSESSING TELECOMMUNICATIONS IN HEALTH CARE 16-17 (1996) [hereinafter A GUIDE TO ASSESSING TELECOMMUNICATIONS IN HEALTH CARE]. Interestingly, the Physician Insurers Association of America (PIAA) has also defined telemedicine broadly. Telemedicine is defined by PIAA as "the provision of health care consultation and education using telecommunication networks to communicate information." Julie M. Kearney, Comment, Telemedicine: Ringing in a New Era of Health Care Delivery, 5 COMMLAW CONSPECTUS 289, 290 (1997) (quoting PHYSICIAN INSURERS ASS'N OF AMERICA, TELEMEDICINE: AN OVERVIEW OF APPLICATIONS AND BARRIERS I

(1996)). This sweeping language suggests that e-mail consultation may require special malpractice coverage, for instance under a "Telemedicine" clause or rider to a standard malpractice insurance policy. Indeed, it is quite possible that malpractice insurers will define acceptable parameters of e-mail consultation practice that will be covered under their insurance contracts.

(189) See Kearney, supra note 188, at 290 n.12 (quoting PHYSICIAN INSURERS ASS'N OF AMERICA, TELEMEDICINE: AN OVERVIEW OF APPLICATIONS AND BARRIERS 1 (1996)).

(190) See TELEMEDICINE REPORT, supra note 187.

> Because of its generality, defining telemedicine as practicing medicine over distances is not particularly descriptive. For example, telemedicine does not include nonelectronic communications between physician and patient over distances corresponding via mail. Such a broad definition misses the mark because the "defining aspect" of telemedicine is the transfer of information using electronic signals. However, a definition incorporating the concept of electronic transfers is still very broad because it can encompass both informal diagnosis and treatment prescription for simple ailments over the telephone as well as the earlier example of high-tech medical application....

Kathleen M. Vyborny, Legal and Political Issues Facing Telemedicine, 5 ANNALS HEALTH L. 61, 69-70 (1996).

(191) See Kearney, supra note 188, at 290 (noting that the Federal Communications Commission created an advisory committee in 1996 to advise the commission on rural telecommunication provisions contained in the Telecommunication Act of 1996); see also Bradham et al., supra note 145, at 147 (discussing the benefits of telemedicine to those in rural areas, such as increasing diagnositc capability, convenience and overall care); Christopher J. Caryl, Note, Malpractice and Other Legal Issues Preventing the Development of Telemedicine, 12 J.L. & HEALTH 173, 204 (1997-1998) (noting that telemedicine technology can minimize or even eliminate problems a physician encounters with rural medicine).

(192) See generally Douglas A. Perednia & Ace Allen, Telemedicine Technology and Clinical Applications, 273 JAMA 483 (1995) (noting that matching technology to medical needs will be difficult because of already limited medical resources).

(193) See Caryl, supra note 191, at 182; Bradham et al., supra note 145, at 156. Additionally, some states with telemedicine legislation specifically require consent prior to engaging in a telemedicine consultation. For example, Arizona's telemedicine law provides that "[b]efore a health care provider delivers health care through telemedicine, the treating health care provider shall obtain verbal or written informed consent from the patient. If the informed consent is obtained verbally, the health care provider shall document the patient's consent on the patient's medical record." ARIZ. REV. STAT. ANN. [sections] 36-3602(A) (1998). The code further provides that "[d]issemination of any images or information identifiable to a specific patient for research or educational purposes shall not occur without the patient's consent." Id. at [sections] 36-3602(D). Likewise, Arizona requires that telemedicine consultations become a part of the patient's medical record. See id. [sections] 36-3602(C).

California also includes an informed consent provision in its telemedicine law. See CAL. BUS. & PROF. CODE [sections] 2290.5(c) (West 1998). In fact, California's informed consent procedure for telemedicine consultations is quite specific. Health care practitioners must obtain both verbal and written consent from the patient or the patient's legal representative. See id. [sections] 2290.5(c). The practitioner must provide the patient with written and verbal information on the patient's right to withdraw consent and the risks, consequences and benefits of the procedure. See id. [sections] 2290.5(c)(1)-(2). Additionally, the practitioner must explain the applicable confidentiality protections and how the telemedicine records will be included in the patient's medical record. See id. [sections] 2290.5(c)(3)-(4). However, the California law explicitly excludes exchanges by "telephone conversation ... or an electronic mail message between a health care practitioner and patient ...." Id. [sections] 2290.5(a)(1).

(194) Likewise, the Institute of Medicine commented that "[d] ecisionmakers still do not have good enough information comparing the effects of telemedicine applications to those of alternative health care strategies for quality, access, cost, and acceptability." A GUIDE TO ASSESSING TELECOMMUNICATIONS IN HEALTH CARE, supra note 188, at 207.

(195) See generally Pergament, supra note 72 (arguing for regulation of Internet psychotherapeutic services to protect consumers). The absence of effectiveness data on e-mail psychotherapy as an effective mental health treatment modality poses significant problems for establishing informed consent. See id. at 255. In addition to the complexity involved in providing informed consent to psychotherapy patients, giving unproven or inappropriate treatment could also give rise to a negligence action. See id. at 253-54 n.87.

(196) See TELEMEDICINE REPORT, supra note 187, at .

(197) Beginning in 1992, Congress established specific legislation to fund demonstration projects designed to expand rural health care through telemedicine. See 7 U.S.C. [sections] 950aaa-5 (1998). The legislation encompassed the transmission of x-rays and other imaging data. See id. [sections] 950aaa-5(b)(6)(A)(II). By 1994, the Department of Health and Human Services (HHS) had awarded numerous grants for demonstration projects under its Rural Telemedicine Grant Program. See Vyborny, supra note 190, at 65 n.28. In addition, "[t]he Clinton Administration recently announced a three-year experiment in which Medicare will pay for telemedicine services at fifty-seven Medicare-certified health facilities." Caryl, supra note 191, at 180. The Health Care Financing Administration (HCFA) has also expressed its concern over the absence of clinical studies showing that telemedicine treatment is as safe and effective as face-to-face treatment. See Bradham et al., supra note 145, at 164.

(198) Kearney, supra note 188, at 297. In fact, many commentators view the gap in reimbursement policy as a deficiency that poses a

significant "barrier" to the development of telemedicine. See TELEMEDICINE REPORT, supra note 187, at (explaining that factors such as third-party payers' "wait-and-see" approach toward telemedicine payment as well as varying Medicare and Medicaid coverage policies are barriers to telemedicine's deployment); Jeff L. Magenau, Digital Diagnosis: Liability Concerns and State Licensing Issues are Inhibiting the Progress of Telemedicine, 19 COMM. & THE LAW 25 (1997), available in Westlaw, ABI-INFORM database (same).

(199) Four states--Georgia, Iowa, North Carolina and West Virginia--are part of the HCFA's demonstration project designed to reimburse a limited number of medical facilities for telemedicine consultation. See TELEMEDICINE REPORT, supra note 187, at . But many more states allow some form of telemedicine reimbursement through Medicaid programs or workers' compensation. See Caryl, supra note 191, at 180. These states include Arkansas, Georgia, Idaho, Montana, South Dakota, Virginia and West Virginia. See id. Additionally, Montana will pay for telemedicine visits in lieu of paying traveling expenses. See id. Finally, HMOs cover a limited number of telemedicine services, particularly for the evaluation of "static images," in New Mexico and California. See id. Other states may have insurers who will reimburse telemedicine consultations on a case-by-case basis. See TELEMEDICINE REPORT, supra note 187, at . New telemedicine reimbursement legislation continues to emerge. See, e.g., OKLA. STAT. ANN. tit. 36, [sections] 6803 (West 1998).

(200) See Magenau, supra note 198 (noting that "because of licensing and liability concerns, out-of-state teleconsultants often do not charge for the conference--hoping to avoid the establishment of a doctor-patient relationship that might lead to attachment of liability").

(201) See Spielberg supra note I, at 1354.

(202) In California, for example, "face-to-face contact between a health care provider and a patient shall not be required under the Medi-Cal program for services appropriately provided through telemedicine." CAL. WELF. & INST. CODE [sections] 14132.72(c)(1) (West 1999). However, the "Medi-Cal program shall not be required to pay for consultation provided by the health care provider by telephone or facsimile." See id. [sections] 14132.72(d). As previously noted, California explicitly excludes e-mail from its definition of telemedicine. See CAL. BUS. & PROF. CODE [sections] 2290.5(a)(1).

(203) However, one group of commentators suggests that "it might be necessary to charge a flat monthly fee for access to physicians by phone or e-mail to both cover the cost and discourage overuse." See James W. Mold et al., 91 J. OKLA. STATE MED. ASS'N 331,333-34 (1998).

(204) It is worth noting, however, that some electronic exchanges between physicians and consumerpatients may involve a direct fee being paid by a patient seeking online consultation. See, e.g., Judy

Foreman, Promises and Pitfalls of Cyber Medicine, BOSTON GLOBE, Jan. 4, 1999, at El (discussing the advantages and disadvantages of "online medical consult services," which charge an Internet user a fixed fee for providing medical services to users, after receiving an e-mail describing their ailments). Some of these online services take steps to disclaim any doctor-patient relationship, but legal analysts note that the financial exchange may itself impose a professional duty of reasonable care. See id.

(205) TELEMEDICINE REPORT, supra note 187, at ; A GUIDE TO ASSESSING TELECOMMUNICATIONS IN HEALTH CARE, supra note 188, at 91-92.

(206) See Spielberg, supra note 1, at 1357.

(207) See id.; see also TELEMEDICINE REPORT, supra note 187, at .

(208) Kearney, supra note 188, at 297. In states with such licensure requirements, a "physician in one state may be legally restricted from providing services via telemedicine to a patient in another state unless he is legally licensed in both states." See id.

(209) See TELEMEDICINE REPORT, supra note 187, at . These states include California, Connecticut, Indiana, Kansas, Nevada, Oklahoma, South Dakota, Tennessee and Texas. See id.

(210) See id.; Kearney, supra note 188, at 297-98. For instance, while California has proposed a limited telemedicine licensing process, the following states have explicitly required full state licensure prior to the practice of medicine within their state by any means, including telemedicine: Arkansas, Arizona, Connecticut, Florida, Georgia, Iowa, Indiana, Kansas, Massachusetts, Maine, Mississippi, Nebraska, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas and Virginia. See Spielberg, supra note 1, at 1357-58.

(211) See Kearney, supra note 188, at 298-300; Magenau supra note 198, at 40-43.

(212) See Spieiberg, supra note 1, at 1358.

(213) See id. at 1357; see also Phyllis Forrester Granade, Medical Malpractice Issues Related to the Use of Telemedicine--An Analysis of the Ways in which Telecommunications Affects the Principles of Medical Malpractice, 73 N.D.L. REV. 65 (1997) (discussing specific elements of malpractice law as applied to telemedicine consultations). One commentator noted that:

> [T]elemedicine merely allows the practitioner to practice medicine in the normal manner .... Although telemedicine uses technology to facilitate diagnosis or treatment, it is designed to transmit to a remote location the same kind of information that is normally available "in person." As such, a physician deliberates in substantially the same manner as if the patient were present in the doctor's offices, and the substance of the interaction is largely unaffected.

Vyborny, supra note 190, at 72.

(214) Id. at 73.

(215) See Granade, supra note 213, at 72; Caryl, supra note 191, at 192.

(216) See Granade, supra note 213, at 67.

(217) See id. at 68.

(218) See Kearney, supra note 188, at 300. Elements of a physician-patient relationship in telephone conversation cases are:

> (1) whether the consulting physician and the patient actually saw each other; (2) whether the physician ever examined the patient; (3) whether the patient's records were ever viewed by the consultant; (4) whether the physician knew the patient's name; and (5) whether the consultation was gratuitous or for a fee.

Id.

(219) See Lopez v. Aziz, 852 S.W.2d 303, 307 (Texas App. 1993); see also Weaver v. Bd. of Regents of the Univ. of Mich., 506 N.W.2d 264, 268 (1993) (holding that a telephone call to a medical center to set up an appointment did not establish doctor-patient relationship where no prior relationship existed).

(220) See Bienz v. Central Suffolk Hosp., 557 N.Y.S.2d 139, 139-40 (App. Div. 1990) (holding that if physician offers treatment or advice by telephone, a professional relationship may attach, even if in the context of scheduling an appointment); see also Gilinsky v. Indelicato, 894 F. Supp. 86, 92-94 (E.D.N.Y. 1995) (finding mentor-supervising physician to have formed a physician-patient relationship with a chiropractic patient, even though the physician and the patient had never met when significant consultation with intermediary practitioner occurred); Wheeler v. Yettie Kersting Mem'l Hosp., 866 S.W.2d 32, 40 (Tex. App. 1993) (holding that physician who approves a patient's transfer may establish a doctor-patient relationship).

(221) See Spielberg, supra note 1, at 1357.

(222) See id. For a more in-depth discussion of standards of care in telemedicine, see Granade, supra note 213, at 74-83.

(223) See, e.g., St. Charles v. Kender, 646 N.E.2d 411,412-14 (Mass. App. Ct. 1995) (noting in dicta that plaintiffs may base their breach of contract claims on a physician's failure to return their telephone call within a reasonable amount of time if the plaintiffs can also prove that the actual damages were greater than nominal).

(224) See, e.g., CONFIDENTIALITY OF INDIVIDUALLY-IDENTIFIABLE HEALTH INFORMATION: RECOMMENDATIONS OF THE SECRETARY OF HEALTH AND HUMAN SERVICES, PURSUANT TO SECTION 264 OF THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT OF 1996 (visited May 12, 1999) . HHS's recommendations include:

(1) protecting against inadvertent or deliberate disclosure of personal medical information; (2) requiring health care payers and providers to give patients clear, written explanations of intended policies on use, retention and disclosure of health information; (3) imposing punishments for those who misuse personal health information; and (4) providing redress for those who have been harmed by health information disclosures. See id. at . For examples of other recent legislative efforts, see Medical Information Privacy & Security Act, H.R. 1057, 106th Cong. (1999) (providing individuals with access to their own health information without losing privacy protection and imposing criminal and civil penalties for unauthorized use of health information); Medical Information Privacy & Security Act, S. 573, 106th Cong. (1999) (same); Health Care Personal Information Nondisclosure Act of 1999, S. 578, 106th Cong. (1999) (protecting the confidentiality of health information).

(225) See Spielberg, supra note 1, at 1354.

(226) Pub. L. No. 104-191, 110 Stat. 1936 (1996) (codified as amended in scattered sections of 29 U.S.C. and 42 U.S.C.). This legislation required HHS to impose confidentiality standards on electronic medical transactions if Congress does not legislate by August 1999. See Barefoot, supra note 24, at 314-15. Accordingly, HHS has proposed rules to regulate the confidentiality of health data, including reimbursement information, that are transmitted electronically. For example, to ensure authenticity and identity of those transmitting and receiving health data, HHS proposed the National Provider Identifier. See National Standard Health Care Provider Identifier, 63 Fed. Reg. 25,320 (1998) (to be codified at 45 C.F.R. 142) (proposed May 7, 1998). It also proposed the Security and Electronic Signature Standards. See Security and Electronic Signature Standards, 63 Fed. Reg. 43,242 (1998) (to be codified at 45 C.F.R. 142)(proposed Aug. 12, 1998).

(227) See 42 U.S.C. [sections] 1320d-2 (1998).

(228) See id. [sections] 1320d-2(d)(2). HCFA's Internet Security Policy also states that

> HCFA Privacy Act-protected and/or other sensitive HCFA information sent over the Internet must be accessed only by authorized parties. Technologies that allow users to prove they are who they say they are (authentication or identification) and the organized scrambling of data (encryption) to avoid inappropriate disclosure or modification must be used to insure that data travels safely over the Internet and is only disclosed to authorized parties.

See Health Care Financing Administration, Internet Security Policy (last modified Feb. 19, 1999) . In addition, the Health Insurance Portability and Accountability Act imposes severe penalties, including fines and imprisonment, on health plans, health care clearinghouses and health care providers who transmit any health information in electronic form in connection with financial and administrative transactions if they fail to comply with security standards designed to safeguard the confidentiality of such information. See Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191, [sections] 262(a), 110 Stat. 1936, 2028-29 (1996) (codified as amended at 42 U.S.C. [subsections] 1320d-5, 1320d-6).

Alissa R. Spielberg, Fellow in Medical Ethics, Harvard Medical School; B.A., 1989, Columbia University; J.D., 1992, Boston College Law School; M.P.H., 1993, Harvard School of Public Health. I am particularly appreciative of the support and thoughtful critique of Scan T. O'Donnell, J.D., M.P.H., of the Department of the History of Science, Harvard University, who carefully reviewed an earlier draft and gave generously of his time and energy. Additionally, I warmly acknowledge the Harvard Medical School Division of Medical Ethics Fellowship, whose members during 1997-1999 engaged in discussions with me about this project. In particular, Walter Robinson, M.D., M.P.H, Director of the Fellowship in Medical Ethics at Harvard Medical School, generously offered his time and made thoughtful suggestions on an earlier draft. Likewise, I thank those practitioners, including my parents, Theodore E. Spielberg, M.D., and Deanna B. Spielberg, Ed.D., who shared their clinical perspectives and enriched my analysis. Finally, I am especially grateful for the capable research assistance of Ali John Qajar Satvat of Harvard College.3

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6/9/4 (Item 3 from file: 349)
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METHOD AND APPARATUS FOR REMOTE PRINTING OF A DOCUMENT
PROCEDE ET APPAREIL POUR TELEIMPRESSION D'UN DOCUMENT
Patent Applicant/Assignee:
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Patent and Priority Information (Country, Number, Date):
Patent: WO 200041064 A1 20000713 (WO 0041064)
Application: WO 2000US22 20000103 (PCT/WO US0000022)
Priority Application: US 99226901 19990108
Designated States: AU CA CN JP KR MX AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Main International Patent Class: G06F-003/12
Publication Language: English
Fulltext Word Count: 6735

English Abstract
Method and apparatus for network delivery and remote printing of documents. An e-mail message including a destination identifier is sent on a network to a remote print service (RPS) provider. The RPS provider receives the message and determines, from the destination identifier, a destination printer address and print format capabilities for a corresponding destination printer local to the intended **recipient** of the e- **mail** message. The RPS provider modifies the e-mail message to conform, as necessary, to the print format capability of the destination printer and sends the modified e-mail message on the network to the destination printer. The destination printer receives and prints the modified e-mail message.

French Abstract
L'invention concerne un procede et un appareil pour service reseau et teleimpression de documents. Un message e-mail comprenant un identificateur de destination est envoye sur un reseau a un dispensateur de service teleimpression (RPS). Le dispensateur RPS recoit les messages et determine, a partir de l'identificateur de destination, une adresse d'imprimante destinataire et la capacite de format d'impression pour une imprimante destinataire correspondante la plus proche du **recipient** voulu du message e- **mail** . Le dispensateur RPS modifie le message e-mail pour le conformer, de facon requise, a la capacite de format d'impression de l'imprimante destinataire et envoie le message e-mail modifie, sur le reseau, a l'imprimante destinataire. Cette derniere recoit et imprime le message e-mail modifie.

Detailed Description
METHOD AND APPARATUS FOR REMOTE PRINTING OF A DOCUMENT
Field of the Invention
This invention relates generally to electronic document delivery. and more particularly to a network-based delivery service that directs e-mail messages to remote I 0 destination printers for automatic printing without requiring intervention by the intended **recipient** of the e- **mail** message.

Background of the Invention

Facsimile is a well-known and pervasive service: it allows a document to be transported from one physical location to another via electronic delivery with output at 1 5 the destination in paper form. Two limitations of the present facsimile technology include a slow transmission speed. i.e.. 20-60 seconds per page. and a resolution limited to a maximum of'.100 dots per inch in fine mode. By comparison. a standard laser printer produces an output of 600 dots per inch at a rate of one page every 5- 1 0 seconds.

E-mail is an alternative medium for transporting a message from one network computer to another: here the output is in electronic form (viewed on a display screen).

It is well known that certain documents, depending on their length and content. are much easier to read from a printed page, rather than a display terminal. E-mail requires that the destination user take certain additional steps to convert an electronic "soft copy" into a printed "hard copy". and in many cases production of a hard copy from an e-illail can .2 5be quite cumbersome. For example. if an e-mail arrives with multiple file attachments, each file must be opened with its associated application in order to be printed.

Thus. it would be desirable to provide an alternative deliverv method. ideally one combining the best features of the known delivery and printina methods.

Summarv of the Invention
@0
According to one embodiment of the invention. a method is provided for network deliverv and remote printing of e-mall messages. The method includes the steps of sendinp an e-mall messaae. includinLy a destination on a network to a remote print service (RPS) provider. The RPS provider receives the e-rnail messa(le and determines. from the destination identifier. a destination printer address and print format 35 capability for a corresponding destination printer local to the intended **recipient** . The RPS provider modifies the e- **mail** message (includina any enclosures or attachments) to conform. as necessary. to the print format capability of the destination printer and sends the modified e-mail message on the network addressed to the destination printer. The destination printer then receives and is enabled to automaticallN, print tile modified e-mail message.

In a more specific embodiment. a method is provided for a public intemet I 0 deliverv and rernote printing of e-mail messages which includes the step of providing a remote print service (RPS) for receiving and delivering e-mail messages on a public internet. A destination user reoisters with the RPS to accept e-mail messages from the RPS. and the destination user provides to the RPS a destination printer address and print format capability of a destination printer. which is local to the destination user. The RPS 1 5 maintains a database correlatina the destination identifier to the destination printer address and print format capability. The RPS, upon receiving an e-mail message with the destination identifier. determines from the database the corresponding destination printer address and print format capability and modifies the e-mail message to conform, as necessan'. to the format capability of the destination printer and addresses the 20 modified e-mail message to the destination printer for delivery on the public internet.

In another embodiment. a computer-implemented remote print service (RPS) directory is provided. It comprises a database correlating a destination

identifier of an email message to a destination printer address and print format capability for a corresponding destination printer.

In vet another embodiment, a computer-implemented print proxy is provided which comprises instructions for causing, upon receipt from a network of an e-mail message with a destination printer address. a destination printer having the destination printer address to print the e-mail message.

Other embodiments of the present invention will be more particularly described 30
bN,tliefollowincydetaileddescriptionanddrawingsofcertainembodiments.

Brief Description of the Drawings
Fig. I is a schematic illustration of a network connecting a sender site and a destination site. Nviierein the network includes a public internet. and a remote print service (RPS) is provided according to the present Invention to process an e-mail message being sent on the intemet.

Fig. 2A and 2B is a flowchart of one method embodiment of the present invention for implementing a remote print service (RPS), with a list of additional features which may also be provided according to the invention.

Fig. 3 is a block diagram illustrating a central processing unit and memory for use in this invention.

I 0 Detailed Description
According to the invention, a remote print service (RPS) is provided which allows an e-mail message and any attachments thereto to be converted to a print format compatible with a destination printer local to the intended **recipient** of the e- **mail** message, and delivered to the destination printer for printing. The RPS network services may be centralized or distributed, depending upon the particular implementation. Also, as understood herein, the remote print service can be provided within a local area network (LAN), as part of a wide area network (WAN), or some combination of LAN and WAN. The wide area network may include a public internet. Furthermore, as used herein the term "e-mail message" is intended to include any message that is sent in electronic form over a network; Simple Mail Transfer Protocol (SMTP) e-mail (and the related Post Office Protocol (POP) for receiving e-mail messages) is one possible communication protocol that can be used for delivering an e-mail.

By way of example, a standard SMTP e-mail address takes the form "user name @ domain name", e.g., the address of John Smith employed by UNX Corporation might take the form "jsmith@unx.corn". To utilize the RPS of the present invention, such an email address may be mod:;ied to the form: "user narne#dornain name.com@rps.net", e.g., "jsmith#unx.com@rps.net". Upor arrival at the RPS provider (at e-mail address & 4rps.net"), the destination user name in the e-mail address is validated as a registered user of the service. The RPS provider then extracts ftom a database a destination printer address and print format capability (e.g., printer type and dniver) that corresponds to the destination user name (here 'jsmith#unx.corn"). Thereupon, the RPS creates a modified e-i-nail message which may include a cover page and a converted e-mail inessage which is consistent with the print format capability of the destination printer. The e-mail (including any attachments and enclosures) is converted and the modified e-mail (cover page and converted e-mail with printer address) is sent to the destination printer. Upon receipt at the intended destination network printer, the modified e-mail is printed in

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5 paper form without requiring intervention by the intended human recipient (destination end user).

Mariv variations of the above addressino scheme are possible. For example. a **telephone number** may be used as a unique destination identifier, C.(T.. 978 757 and another RPS provider **name** . e.(,., "remote-print.net" for the RPS service provider. The 10 senderoftliee-mailmessagewouldthusaddressitto:"978 7575@Fi)remoteprint.net". In this case. the RPS would **map** (correlate) the **telephone number** to a corresponding destination printer **address** and print format capability local to the destination user. Note that in this case, the telephone **number** has no application to the telephone system - it is simply a means for uniquely identifying tile recipient 1 5 (destination end user).

At the destination. the RPS communicates with a locally-installed network print software. a "print proxy". that handles communication security and coordinates the delivery of the modified e-mail message to the appropriate destination printer. The print proxy also provides status updates to the RPS as pages are successfully (or 20 unsuccessfully) printed at the destination printer. Tile RPS may store the acquired status information in one of its databases. This status information may then be accessed by one or both of the sender and the intended recipient to determine the delivery status of the message.

Other implementations which will be described below include.

the RPS enables end users located inside a company's local area network to print e-mail messages on any registered internal printer by using the RPS;
the RPS enables companies with multiple offices connected by any form of WAN network to reduce their cost of communications bV using the RPS to remote print documents sent between offices.

Another option is to use an existing fax number as the remote printer identifier.

This mechanism allows an ororanization to treat tile RPS as an extension of a facsimile service. Instead of sending a fax. one can send a remote print document using tile same fax number that is currentiv on a user's business card. The RPS would contain a '35 directorv that maps the fax number (printer identifier) to the LAN or WAN address of the appropriate network-based printer. By using a valid fax number as the printer 5 identifier. the RPS NN-111 also be able to use the existing fax machine as a backup delivery option (for printing) in the event that the destination (high speed network) printer is not available or is broken.

In one embodiment. one desiring to use the RPS registers as a destination end user. Then. as a recristered user of the service, anvone in the world with access to a I 0 public internet and to SMTP e-mail will be able to send a document to tile registered user which will be printed out. for example, on a high-speed, high-resolution laser jet printer located in or near the user's office. Tile registered user may be billed for the service, irrespective of who sends the message.

In another embodiment. the service requires that both tile sender and the receiver 15 be registered for tile service. Then one or both of the sender and receiver may be billed for the service, e.g., billing may be

based on the number of pages sent. the size of the printed file and/or a flat monthly fee for unlimited use of the RPS.

Fig. I shows a particular implementation of the remote print service which will be described by way of example below. An Internet cloud IO, intended to represent a -%vide area network including one or both of the public internet and a private network, is shown in tile center between a sender site 12 on the left and a destination site 14 on the rifyht. Connections to the Internet from both the sender and destination sites may be by dial-up lines 16, 1 7 or dedicated lines 18. 19. The sender site has an S-MIME (Multipurpose Internet Mail Extension) client 15 connected by dial-up line 16 to the Internet. The sender site also has a plurality of individual personal computers 20 connected by a local area network (LAN) 22 to an SSL server 24 and an e-mail server 26: the e-rnail server 26 is connected bv dedicated line 18 to the Internet. Oil the other 'de, the destination site 14 has a single computer 28 and a single laser printer 30. local si t@ ? to tile computer 28, connected by dial-up line 17 to the Internet. A print proxy software 29 interfaces with the dial-up line 17 for receiving a modified e-rnail from tile RPS server 32 over the Internet. The destination site 14 also has a plurality of personal computers 34 connected to a local area network '36. and a plurality of laser printers 38 connected to the local area network 36 as well. A network print/file server 40 controls the network printers 3) 8. and a print proxy 42 and a firewall 44 are shown connected to the Internet b-%r wav of dedicated line 19 to control access to the LAN 36. Tile print proxy 42 will receive the modified e-mail from the RPS server 32 over the internet.

The RPS is shown as a server 32. connected bv line 33 to the Internet 10, wherebN, it receives e-i-nail messai-yes intended to be sent from the sender site 12 to the destination site 14 where both sender and destination are registered users of the service.

The RPS 32 receives an e-mail message from the sender site 12. and sends a modified email message to a printer (38 or 30) at the destination site 14 - whichever printer is IO designated for the intended **recipient** of the e- **mail** message. In this example. the RPS includes the following services.

Security service provides standards-based authentication and encryption services to validate and protect the sender: the supported standards include S-MIME clients and SSL (Secure Socket Layer) servers. Suitable svsterns which incorporate these standards are available from Microsoft, Netscape., and Baltimore Technologies. The sender is required to use the standards-based securitv software in order to gain access to the RPS,- this
insures accurate billing for the service. Corporations would be expected to implement SSL security at the server level, while small office/home office customers would utilize S-MIME client software.

Registration service provides Web-based registration for both senders and destinations wishing to use the RPS, For example. senders may register over the Web bv creating either individual accounts or corporate accounts.

Corporations have the option to authorize access to everv end user in a (liven e-mail domain or only specific end users. Destinations will install
or enable the appropriate print proxy software, the print proxy software will interface with the printer management software running on the

destination site, as opposed to the printers themselves.

Billin(y service enables billing of the sender for delivered pages. and will
no
allow the destination to establish a fee for the printing of documents at the destination end.

Real-time deliverv status service allows both the sender and destination to track the status of all e-mail messages utilizing the service in real-time via the Worldwide Web.

.3 Directory service provides a destination identifier to destination printer routing information, destination printer capabilities, and end user service preferences.

0 Cover page management service allows senders to create and maintain any number of custom cover pages for use with the RPS. A corporation I 0 can have a default cover page for all senders, with departments and select end users defining personalized cover pages if appropriate.

0 Conversion service converts the sender's e-mail message (with enclosures
and attachments) into a printer output file using the appropriate print driver for the destination printer.

For purposes of this example, anyone who is a registered RPS user can use the RPS service to cause an e-mail document to be printed on a network-based printer at a destination site, if the destination printer has been registered with the RPS. The service assumes that both the sender and receiver have been registered on the service. However, the service will work if only the recipient is registered as long as the recipient is willing to pay for the service of allowing other people to send documents to them via the RPS.
In order to register as a recipient, an end user must register a printer identifier, which in this case we assume will be the end user's phone number. The registered user also needs to provide a destination printer address, a printer type, and an IP address of a print proxy that is located outside of the security firewall (e.g., 44) of the organization.

Using this implementation, the service will allow a user A at tile sender site 12 to send a remote print document tc user B at the destination site 14, by addressing an e-mail message, with or without enclosures and attachments, as follows: "978-55 1 7575@remote-print.iiet". In this example, "978 7575" is the unique phone number for user B and "remote-print.net" is the SMTP mail address for the RPS.

The RPS 32 receives the e-mail message and gathers both the "from" address and the "to" addr ess from the e-mail message. The "from" address is used to determine if the sender (user A) is a registered user, and to determine the cover page template registered by tile sender. In this implementation, if the sender is not registered then tile remote print service will return a message via e-mail to the sender that tells the sender how to register for the service. However, if the recipient (user B) wanted to offer a "toll-free"
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remote print number, then the sender would not need to be registered to use the service.

Using the toll-free example, the RPS would bill the recipient for the service regardless of who sent a message.

The remote print service 32 uses the "to" address to look up the following registration information in a database directory.

0 network address of the recipient's print proxy;
0 network address of the recipient's network printer;
0 type of network printer;
0 security related data, if appropriate, e.g., digital certificate information;
1 5 0 alternate delivery address, e.g., alternate printer or fax machine or
both;
0 e- **mail** address of the **recipient** .

The remote print service assembles a complete remote print document by creating the cover page from the header and text of the e-mail and by collating and counting the pages of each attachment. The cover page will include the name of the intended recipient as registered with the RPS. The cover page will also include a summary page count (e.g., six pages including the cover sheet) which will be determined by counting the total number of pages included with each attachment. The final output is prepared using the specific print format of the registered network printer. The output is sent to the pri.,, proxy 42 via a WAN or LAN connection. The implcmentation above assumes the use of the Internet 10 as the WAN connection. The print proxy 42 submits the print job to the appropriate network printer 38 and return status information to the remote print service 32. The remote print service posts status information on the Internet web-based status service which can be accessed by both the sender and the recipient. If the print job goes through as expected then the remote print service updates the status service and submits a billing event. If the print jobs fails partially or completely, then the remote print service utilizes the concepts of alternative delivery, such as retrying, rerouting or rescheduling the document for delivery. The cycle continues until the document is delivered or canceled by the sender.

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The specific implementation outlined here assumes that the recipient could register a second printer as an alternate delivery device. or the recipient could register a fax machine as an alternate deliverv device to be used in the event of a delivery problem.

The implementation assumes that the status service will inform both the sender and recipient of the time and location of delivery of the message.

The followinu end user experience summarizes the experience from the perspectives of the sender and recipient.

Sender Experience
Finding, A Printer Address: If a sender already knows that the recipient has a
registered printer. then all the sender needs to know
1 5 is the recipients's phone number to accurately
address a message. If the sender is not certain. the
RPS Web site will provide a directory for locating
registered users based on phone number. name,
company name. location, etc. The RPS directory

-)O will also contain a listing of printer attributes in the event that the sender wants to take advantage of the full range of capabilities of the destination printer.

Addressing A Message: Create an SMTP e-mail message with any number of attachments and address as follows.

phone number(&Xemote-print.net.

Real Time Deliverv Status: Real time deliverv status will be available on the
RPS Web site. Individual senders will maintain their own password to gain access to the status of their specific documents. Delivery status is an
@O
HTML (Hypertext Mark-up Language) service that can be accessed from any type of browser.

Billing: Senders will be billed for use of the RPS service on either a usage basis or via a flat monthly fee per end-user. RcPistration is assumed to be free.

Cover Paae Nlanauement: Senders have the option to create a custom cover page which will be used by the RPS service in
I 0
delivering documents from the sender. The Cover Page Management service allows cover pages to be established for a department, office, division, business unit, or entire corporation.

E-Mail Notification: Senders will have the option to receive e-mail notification of delivery problems and/or delivery .onfirmat;on in local language at no charge.

Recipient Experience
Receive A Document: RPS documents will show up on the recipient's designated printer with a cover page addressing the document to the appropriate **recipient** .

E- **Mail** Notification: Recipients will have the option to request e-mail notification of in-bound documents at no additional cost.

On-Line Status: If a recipient is waiting for an important document the recipient will be able to check status of in-bound documents via the Web.
Fig. 2A and 2B illustrates in flow chart form three events--sending, converting and printing an e-mail message, according to an embodiment of the present invention. In a first step 60, a sender prepares an e-mail message (as used herein e-mail message includes any attachments and enclosures); the e-mail message includes an address specifying the destination identifier and the RPS. The e-mail message is then sent on the Internet to the RPS. In a second step 62, the RPS receives the e-mail message, determines the destination printer address, and printer type from the destination identifier, and creates a modified e-mail message by adding a cover page, converting the e-mail message as necessary to the format of the destination printer, and providing an address of the destination printer. The modified e-mail message is then sent on the Internet to the destination printer. In a third step 64, the print proxy at the destination printer receives the modified e-mail and the modified

e-mail is then printed at the destination printer, without requiring intervention of the recipient.

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Fig. 2A and 2B also illustrates for each of the steps 60, 62, 64 respective optional features 61, 63, 65 which may be provided according to the present invention. These optional features are discussed in greater detail in other parts of the specification.

For example, one optional feature of the present invention is used to simplify the printing of inbound fax messages. There is a messaging service called "inbound fax" that is becoming increasingly popular. Inbound fax assigns a personalized fax number to a specific individual which can be used to route a fax message into the end user's e-mail in-box. With an inbound fax service, an end user receives e-mail messages with an attachment that is a fax (TIFF) image. In order to view the inbound fax the end user must load up either a standard TIFF viewer or proprietary fax viewer software provided 1 5 by the inbound fax service to view and print the inbound fax. In contrast, the RPS service according to the present invention can be used as a mechanism to simplify the printing of inbound fax messages that are received by an end user as e-mail attachments.

Instead of loading up a TIFF viewer, the end user can forward the e-mail message (with attachments and enclosures) to the RPS, and the RPS will respond back with a formatted cover page and fax message printed out for the end user. The end result is that the end user was able to "remote print" an inbound fax message by simply forwarding the inbound fax e-mail to the remote print service.
Another optional feature can be used to reduce the cost of desktop faxing for a multi-location enterprise customer. For example, LJNIF1 Corporation of Lowell.' Massachusetts provides a desktop fax service that utilizes IP backbone net%A%)rks to deliver fax messages which originate on a desktop PC. The remote print service of the present invention can be used as a mechanism which will substantially reduce the cost of desktop fax messages which flow between offices of a large corporation. The typical desktop fax service allows an end user to send a document via fax by using SMTP addressing as a mechanism for working with a network-based fax service. One addressing standard that is common in the industry is as follows.

"fax number@vendor.com". The desktop fax vendor receives the message and forwards the message to the destination fax number contained in the message. If the destination is registered as a remote print service customer, then the desktop fax vendor would have the option to look at the destination fax number, check the remote print service to find out if the fax number is registered with a remote print address and reroute the message to
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5 the remote print address rather than the fax address. The benefit of rerouting is that the outbound message can be delivered to the destination via the public Internet with no connection to the public switched telephone network (PSTN). By completel,@ eliminating the PSTN from delivery of the fax message. the cost of the delivery can be reduced, This specific implementation assumes that the destination fax machine has I 0 been previously registered with the remote print service and the company that owns the fax machine is requested that fax messages should be rerouted to the remote printer to save monev. This

implementation would be desirable to companies with multiple offices--every time an employee sends a desktop fax message to a fax machine located at one of the company's offices. the remote print service will reroute the message to the 1 5 remote printer thus reducing the cost.

In the implementation described above. the multi-location company could achieve similar cost savings by training its employees to always use remote printing as an alternative to desktop faxing when communicating between offices. However, this solution requires that the end users alter their prior behavior.

Still another optional feature is to simplify the printing of e-mail messages with attachments. Similar to the option previously described with regard to inbound fax messages, an inbound e-mail message (with enclosures and attachments) can be sent by the end user to the RPS, which will return back a correctlv collated and counted print file with the formatted cover sheet which can be automatically sent to a printer local to the end user.

Still another option allows an end user to send a message with any number of attachments. and any type of attachments. to anv number of destinations in a single action. For example. the same message can be sent via e-mail to one destination. via remote print service to another destination. and via desktop faxing to a third destination.

3 0 all in one message.

The RPS server may be implemented using computers manufactured by Hewlett Packard or Sun Microsvstems. Database management software is available from Oracle Corporation. Complete systems which perform similar ftinctions are available from network service providers such as UNIFI Communications. Inc. The print proxy may be
35 implementedusingcomputersavailablefromCompaqorDell.xN-ithcommerciallv available or user designed software.
-5 Various features of the invention may be implemented using a general purpose computer 161 as shown in Ficy. 3. The general purpose computer may include a central processing unit (CPU) 162. memory 163. a processing bus 164 by which the CPU can access the memorv. and interface 165 to the network. Thus. the invention mav be implemented using hardware and/or software.

I 0 Although several preferred embodiments of the invention have been specifically illustrated and described herein. it is to be understood that variations mav be made
I
without departing from the scope of the invention as defined by the appended claims.

Claim
1 A method for network deliverv and remote printing of e-mail messages comprising:
sending an c-mail message. including a destination identifier. on a network to a remote print service (RPS) provider.
the RPS provider receiving the e-mail message and determining, from the destination identifier, a destination printer address and print format capability for
a corresponding destination printer:
the RPS provider modifying the e-mail message to conform, as necessary, to the print format capability of the destination printer and sending the

modified e-mail message on the network to the destination printer, and the destination printer receiving and printing the modified e-mail message.

2 The method of claim 1, wherein an intended destination of the e-mail message must be registered with the RPS provider to allow the delivery and remote
printing.

3 The method of claim 2. wherein a sender of the e-mail message must be registered xvith the RPS provider in order to allow the delivery and remote printing.

4 The method of claim 3. wherein one or more of the intended destination and sender are billed for the delivery and remote printing.

5 The method of claim 1. wherein the destination identifier is selected from
an e-mail address. and a telephone number.
6 The method of claim 1. wherein the e-mail message received by the RPS 'der has an address which includes a name of an intended destination and a name of
provi I
the RPS provider.

7 The method of claim 1. wherein the e-mail message includes attachments which are conformed. as necessary. by the RPS provider and included in the modified e
mail messaize.

8 The method of claim 1. wherein the RPS provider adds a cover page to the modified e-mail rnessa(ye. 5 9. The method of claim 8. wherein the cover page identifies one or more of an intended destination. a sender of the e-mail message. the RPS provider. and information for registering with the RPS provider to receive modified e-mail messages.

10 The method of claim 1. wherein the RPS provider tracks a delivery status of the e-mail message and the modified e-mail message.
I 0 11. The method of claim IO, wherein each of a sender and an intended destination can access the delivery status at the RPS provider.
12 The method of claim IO. wherein the delivery status is accessible at a web site. I 3. The method of claim 10, wherein the deliverv status is accessible via a 15 web browser.

14 The method of claim 1, wherein a print proxy local to the destination printer receives the modified e-mail message and instructs the destination printer to print
the modified e-mail message.

15 The method of claim 14, wherein the print proxy provides a delivery
20 status to the RPS provider.

16 The method of claim 1, wherein the e-mail messa e is an SMTP e-mail
9
message.

17 The method of claim 1. wherein notification of one or more of delivery confirmation and delivery problems are sent to an intended destination having the 25 destination identifier.

18 The method of claim 17, wherein the notification is bv e-mail.
19 The method of claim 1, wherein a sender of an e-mail message can access the RPS provider for destinations which are registered with the RPS provider to receive
modified e-mail messages.

20 The method of claim 1. wherein the network includes a public internet.

21 The method of claim 1. wherein prior to sending an e-mail message on the network. the e-mail message is selected for delivery by one or more of the RPS provider, a facsimile service on a private network. a facsimile service on a public switched telephone network. and e-mail delivery service via the public Internet.

22 The method of claim 1. wherein prior to sending an e-mail message on the network, the e-mail message is encrypted. 2 3. The method of claim 1. wherein prior to sending an e-mail message on the network to the RPS provider, a network or computer local to a sender of the e-mail message confirms that the sender is registered with the RPS provider. I 0 24. The method of claim 1, wherein the RPS provider sends a registration mail message to a sender of the e-mail with information on registering with the RPS
provider.

25 The method of claim 1. wherein the RPS provider provides one or more alternative delivery capabilities including re-try, re-routing, and re-scheduling. 1 5 26. The method of claim 1, wherein a destination that receives an inbound fax forwards the inbound fax as an e-mail message to the RPS provider and the RPS provider creates a modified e-mail message which is sent on the network to a destination printer corresponding to the destination for receiving and printing the modified e-mail message.

27 A method for public interriet delivery and remote printing of e-mail 20 messages comprising:
sending an e-mail message. including a destination identifier. on a public
internet to a remote print service (RPS) provider;
the RPS provider receiving the e-mail message and determining, from the destination identifier. a destination printer address and print format capability for
a corresponding destination printer:
the RPS provider modifying the e-mail message to conform. as necessary, to the print format capability of the destination printer and sending the modified e-mail message on the public internet to the destination printer, and
the destination printer receiving and printing the modified c-mail message.

28 A computer-impiemented remote print service (RPS) directory comprising:
a database correlatino a destination identifier of an e-mail message to a destination printer address and print fori-nat capability for a corresponding 3 5 destination printer.

29 A computer-implemented print proxy comprising:
instructions for. upon receipt from a network of an e-mail message with a destination printer address. causing a destination printer having the destination printer address to print the e-mail message.
A method for public internet delivery and remote printing of e-mail

IO messages comprising:
providing a remote print service (RPS) for receiving and delivering e-mail messages on a public internet.
a destination user registering with the RPS to accept e-mail messages from the RPS. and the destination user providing to the RPS a destination printer 1 5 address and print format capability of a destination printer. local to the
destination user;
the RPS maintaining a database correlating a destination identifier of the destination user to the destination printer address and print format capability of
the destination printer; and
the RPS. upon receiving an e-mail message with the destination identifier, deten-nining from the database the corresponding destination printer address and
print format capability and modifying the e-mail message to conform, as necessarv. to the format capability of the destination printer and addressing the modified e-mail message to the destination printer for delivery on the public internet to the destination printer for printing.
SENDER SITE@12 14,,--DESTI
S-MIME PF
PR
-q@
r !n
15
DIAL-UP DIAL-UP
16 17 2
4
r 24 1 0 42
SSL DEDIC TED DEDICATED PRINT
TERNE
AlL PROXY
E-M 19
SERVER
FIREWALL
J2
Fol 26 RPS
447
CONVERSION
REGISTRATION
Ell o BILLING
oREAL-TIME STATUS
eDESTINATION DIRECTORY PRINT/FILE
COVER PAGE MGMT.
SECURITY (CERTIFICATE SERVER
MGMT.) 40
FEI J6A
FIG* 1
/4
60
SENDER PREPARES EMAIL MESSAGE
(INCLUDING ATTACHMENTS) WITH ADDRESS
INCLUDING DESTINATION IDENTIFIER
AND RPS, AND SENDS (ON INTERNET)
TO RPS
62
RPS RECEIVES EMAIL MESSAGE, DETERMINES
DESTINATION PRINTER ADDRESS, PRINTER TYPE
AND DRIVER FROM DESTINATION IDENTIFIER,
MODIFIES EMAIL MESSAGE BY CONVERTING

(AS NECESSARY) TO FORMAT OF DESTINATION
PRINTER, ADDING COVER PAGE AND ADDRESS
OF DESTINATION PRINTER AND SENDS MODIFIED
EMAIL (ON INTERNET) TO DESTINATION PRINTER
64
PRINT PROXY AT DESTINATION PRINTER
RECEIVES MODIFIED EMAIL AND
SUBMITS TO DESTINATION PRINTER
TO PRINT
FIG* 2A FIG*
FIG* 9 A
twom I I
SUBSTITUTE SHEET (RULE 26)
/4 61
ACCESS STATUS INFO. AT RPS
ACCESS RPS FOR REGISTERED DESTINATION
AUTOMATIC EMAIL NOTIFICATION OF DELIVERY
CONFIRMATION OR DELIVERY PROBLEMS
SEND TO DESKTOP FAX SERVICE
ENCRYPT
CONFIRM AUTHORIZED SENDER
SEND SAME MESSAGE BY EMAIL FAX
6J
CONFIRM DESTINATION IDENTIFIER IS
REGISTERED USER
BILL SENDER AND/OR DESTINATION
TRACK DELIVERY STATUS
CONFIRM SENDER IS REGISTERED USER
SEND SENDER A MESSAGE ON HOW TO
REGISTER
ALTERNATIVE DELIVERY (RE-TRY, RE-ROUTE,
OR RE-SCHEDULE)
65
* SEND STATUS UPDATES TO RPS
o ACCESS STATUS INFO. AT RPS
o EMAIL NOTIFICATION OF DELIVERY
CONFIRMATION OR DELIVERY PROBLEMS
9 SEND INBOUND FAX TO RPS
RG* 2B
SUBSTITUTE SHEET (RULE 26)
/4
165 164
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INTERNATIONAL SEARCH REPORT Inlet onal Applicatton No
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Documentation searched other than minimum documentation to the extent

that such documents are included in the fields searched Electronic data base consulted during the intemational search (name of data base and, where practical, search terms used)
C. DOCUMENTS CONSIDERED TO BE RELEVANT
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American Journal of Law & Medicine
Summer-Fall, 1999

Online without a net: physician-patient communication by electronic mail.

Author/s: Alissa R. Spielberg

I. INTRODUCTION

Patients continue to find new ways of reaching their physicians. In the past, patients and their health care providers developed relationships through the course of everyday affairs and across a wide variety of social exchanges. Although other methods of communicating were introduced into the medical context, telephones, pagers and voicemail all retained some connection to individual voices. Moreover, medical practitioners and patients alike never anticipated that these technologies would substitute for genuine personal interactions. Nor did they anticipate that another new technology, electronic mail (e-mail), would shift communications back in time to the days when letter writing formed the basis for diagnosing and relating. E-mail in medical practice has already begun to reconfigure the patient-physician relationship in the electronic age.(1)

This Article will discuss the rights and expectations of patients and physicians when they communicate electronically. Part II describes the historical context of electronic medical communication. Part III reviews current practice standards for medically related communication. Part IV discusses the inclusion of medical communication documentation in the medical record. At the intersection of several legal fields, electronic communication by health care providers and patients implicates a variety of legal concepts. Part V assesses the current law of medical information privacy and physicians' duty of confidentiality as these principles inform clinical e-mail use. Additionally, Part VI argues that existing informed consent standards likewise apply to medical e-mail. Part VII analyzes the relationship between medical e-mail and existing and developing telemedicine law. Part VIII explores newly emerging government and insurance industry proposals for integrating electronic communication into standard practice. Finally, this Article considers practical suggestions for the use of medical e-mail.

II. BACKGROUND: HISTORY OF ELECTRONIC MEDICAL

COMMUNICATIONS

Electronic communication in medicine is an outgrowth of technological innovation and social custom.(2) Until recently, medical practitioners, patients and insurers communicated solely by postal mail, telephone or in person.(3) Indeed, early American medicine was practiced predominantly in person or by written description delivered by courier or mail.(4) During the seventeenth and eighteenth centuries, physicians valued patients' descriptions of their illness above a physical examination when making medical diagnoses.(5) By the middle of the nineteenth century, however, physical evidence determined medical conclusions; thus, physicians needed to examine their patients to make accurate diagnoses.(6) Physicians traveled to their patients' homes and, after 1843, could consult, again in written form, by telegraph.(7)

The telephone dramatically altered the patient-physician relationship soon after its invention.(8) Despite some trepidation about using the telephone for such personal matters, patients quickly accepted the technological exigencies in order to receive better medical care.(9) Once patients believed that telephone lines were secure, they became increasingly dependent on the telephone for medical consultations, particularly in emergencies.(10) By the mid 1960s, telephone communication routinely supplemented face-to-face appointments and facilitated health promotion by allowing people who could not travel to access to medical care.(11) By retaining a live connection to individual voices, the telephone was "the next best thing to being there."

Communications in the health care industry generally were augmented and facilitated by computer-based information networks. (12) Health information networks emerged in the 1960s, first for bibliographic and academic purposes and later for public health data tracking and health organization internal record keeping.(13) Electronic communications among health organizations were virtually unknown during the following two decades.(14) Notably, just as pharmacies rapidly adopted early telephone use, the pharmaceutical industry inaugurated computerized communication in health care delivery.(15) Indeed, "[t]he communication loop among pharmaceutical manufacturers, wholesalers, retail stores, and payers was one of the earliest to be computerized."(16) With the pharmaceutical industry online, pharmacies themselves began transmitting and receiving electronic information about their customers.(17) By the early 1990s, drugstores electronically processed insurance eligibility, copayments and claims for most covered prescriptions.(18) Nonetheless, most pharmacies have not initiated corresponding programs to link individual physicians to pharmacies for online prescription transmittal, though some facilities are experimenting with such connections.(19)

Hospitals ordered supplies electronically as early as the mid 1970s using specifically dedicated terminals linked with American Hospital Supply.(20) Hospitals and government agencies began forming computer networks by the mid 1980s.(21) Later, hospitals, and eventually individual providers, submitted Medicare claims to the

government through processing clearinghouses.(22)

As medical practice relied increasingly on computers for billing management and diagnostic data, more physicians began to follow suit by purchasing computers for their offices.(23) Indeed, the advent of managed care has created an increased need for documentation and computerization in order to process the increasing number of claims submitted.(24) As such, many physicians and other health care providers understood the concept of connecting with insurers or hospitals via computer even before the vast expansion of the Internet.

III. CURRENT PRACTICE REQUIREMENTS FOR COMMUNICATION TECHNOLOGIES

While most physicians contentedly rely on personal or telephone contacts to practice medicine, some doctors have recently begun to explore using e-mail and other forms of electronic communication with patients, insurers and colleagues.(25) Evidence also suggests that patient demand for electronic communication with health care practitioners is growing.(26) Nonetheless, early indications show that merely one to two percent of physicians use e-mail to communicate with patients,(27) though more use electronic means to conduct research or communicate with colleagues.(28) Physicians who are employing electronic communication are experimenting with the contours of cybercare; some offer informational or interactive web sites,(29) others diagnose and prescribe for a consultation fee,(30) while others establish centers for international access to specialized care.(31)

Like the telephone, e-mail may serve a useful function in the instantaneous delivery of information. An additional benefit of e-mail, though, is that it is never busy and, like a fax or answering machine, it does not require that the recipient be present to receive the immediate message. Unfortunately, although land telephone lines are relatively secure, e-mail, like faxes and cellular or cordless phones, are inherently more susceptible to interception.(32) Moreover, e-mails, fax transmittals and telephone voicemail messages can be forwarded to unintended or unknown recipients. E-mail and fax transmittals also can be printed out, copied and circulated manually. Additionally, both e-mail and voicemail rely on a central computer platform to store or forward a message. A central system retains an electronic translation of the message and can restore the message even after an individual user deletes it. Deleting an e-mail merely removes the message from the screen and hard drive of an individual terminal, but the record of the e-mail is not deleted. As a result, e-mail users can deny neither sending nor receiving the message.

Although e-mail is transmitted via telephone connection, it is more like postal mail than a telephone conversation. E-mail requires a unique mailing address, indicates a return address, akin to company letterhead, and displays a "postmark" indicating the message travel route, the time sent and the time received. Furthermore, e-mail is a written exchange that can be easily stored, forwarded, copied or

printed. E-mail also is easily subject to alteration and interception without detection. Postal mail is transported through a relatively secure system, but users enhance security by placing messages in envelopes. This additional step is particularly important for revealing evidence of tampering.(33) With electronic communications, encryption software can scramble message contents until it is received by the intended addressee.(34) More important, encryption guarantees message authenticity and integrity.(35) Thus, encrypted e-mail is comparable to the delivery of a registered letter, while unencrypted e-mail is more similar to a postcard.(36)

Therefore, although it is useful to compare telephone and e-mail practices, certain aspects of the electronic technology require additional precautions before doctors and patients may safely communicate by e-mail so that potential risks and liabilities are clear to both parties.

IV. ELECTRONIC COMMUNICATION AS A MEDICAL RECORD

Traditionally, any document about a health care interaction becomes a part of a patient's permanent medical record.(37) Admission to a health care institution, medical testing and appointments with medical staff are all included within the medical record.(38) More important, health care providers retain documents related to personal history, diagnosis and treatment as medical records.(39) In most states, the scope of "medical records" includes all "records kept in the usual course of the practice of the health care provider"(40) or, more generally, any personal information that relates to a person's health care.(41) Likewise, all communication that is generated by or about the patient, including any photographs or imaging, is part of the medical record.(42) Medical staff note and summarize telephone conversations whenever possible because doing so promotes favorable medical outcomes and constitutes good medical practice.(43) This compilation of materials recording medical test results and health care providers' observations and opinions provides the basis for the continued care and treatment of a patient. (44) Furthermore, the law requires the retention of these materials (45) and, in some instances, state and federal governments or accreditation bodies specifically regulate this retention process.(46) Notably, a failure to preserve all such medical record information may constitute malpractice if a patient is harmed by a health care practitioner's actions that result from mistaken assumptions about the medical record.(47)

These general record-keeping standards apply equally to electronic or computerized medical records.(48) However, the consent requirements for review and alteration of the computerized medical record are less stringent than those concerning release of medical records generally.(49) Indeed, even though the law requires a patient's written consent for the transfer of medical records to third parties, no patient consent is necessary to use the medical record for data processing.(50) Significantly, one commentator notes, "[t] herefore, personal medical information may be entered into a computer system without informing the patient and without implementing additional standards for its security."(51)

Although a patient's personal communications with a health care provider are part of the medical record, whether in the paper chart (52) or transferred to electronic form, the patient's own words rarely appear in the descriptive summaries of medical histories, treatments or encounters.(53) A physician's notes, for example, may describe how that practitioner perceived the patient's own narrative of personal history. These entries are often written in the passive voice, as though they were objective facts rather than representations of individual histories, sensations and feelings.(54) Accordingly, the doctor distills the actual interview, or human medical encounter, into impressions and particular descriptions that the practitioner prescreens as relevant to isolating specific medical diagnoses.(55)

Critics assert that far from providing an objective account of reality, the medical record is wholly constructed by physician-authors(56) and other medical personnel.(57) As the patient presents one account of his or her experience, the health care provider is almost simultaneously interpreting the patient's story in order to present the medical story that will be relayed to any authorized onlooker through the medical chart notation.(58) Indeed, the charted version can only be a representation of the actual medical conversation, one that is filtered through the practitioner's lens. Some have argued that "the medical record plays an active, constitutive role in current medical work[,] ... shaping and maintaining a patient's trajectory ... [and] shaping ... the doctor-patient encounter."(59)

Such summaries may be necessary in contemporary medicine. A health care practitioner, by isolating significant details from the patient's narrative, which may in part be directed by the physician, can focus attention on potential diagnostic clues. This approach does not inherently prevent the practitioner from hearing the patient's full range of experiences; rather, it facilitates the identification and treatment of illness in a nonjudgmental way.(60) Yet, practitioners and patients alike should acknowledge that the practitioners' notations in the medical record do not provide the whole story of the patient's experience of self and illness. Medical record entries or progress notes conform to a standard that is easily understood by other practitioners.(61) Furthermore, such summaries are easily transferable to an electronic format because medical staff originally organized the information around specific concepts and subject areas.(62) Some predict that, eventually, all such medical record information, including the medical practitioner's narrative, will be originally generated, stored, transmitted and retrieved in electronic media.(63)

Although a patient's own written communications, such as letters to physicians concerning medical progress, symptoms or detailed histories, could conceivably be converted into an electronic format by scanning or manual entry, such a complete electronic transfer has not yet been contemplated. Currently, only a summary of those kinds of communications are included within the text of the practitioners' running entries.(64) As a result, neither a patient's own description of his or her symptoms or history nor a running log of patient-physician communication are usually found in medical records.

With e-mail, however, patients' own words will appear in the medical record. The very interactions themselves will be recorded verbatim, serving as a transcript of the encounter.(65) Moreover, these e-mail communications will no longer be prescreened for "medically relevant" material. Because such communications between patients and their health care practitioners are readily stored electronically, physicians may access the e-mails for future reference when complete medical histories would ordinarily facilitate medical decision making.(66) Health care workers should maintain e-mails in the patient's medical record like any other relevant document. Medical staff must archive electronically, or print and preserve in the paper chart, any e-mail that pertains to an individual patient.(67) This proper documentation is essential for e-mail because the patient may store these electronic messages, even if the physician makes an attempt to delete them.(68) Additionally, because e-mails are subject to discovery in a potential legal proceeding, they must be treated as medical records.(69)

To protect e-mail messages that have become part of a patient's record from authorized, but unwelcome observers,(70) medical staff should maintain most clinical e-mails in a separate, private section of the record.(71) Otherwise, health care practitioners, whose specialty fields differ from the symptoms described, and insurers, prior to making coverage determinations, could view medically related e-mails unless special protections over the patients' words were instituted. Just as some states treat sensitive psychiatric information differently from other general medical information,(72) e-mail between patient and health care providers should not be available to all known and authorized users of the medical record. Practitioners should be aware that some e-mail information may be too sensitive and too personal to include in the full electronic or paper record, just as patients may ask that certain information discussed in person not be recorded in a permanent file. Therefore, although a hospital employee, a third-party payer or a newly referred health care provider may have legitimate reason to review a patient's medical record, the e-mails would not appear in that more basic record. The sensitive e-mails would be archived elsewhere, accessible only by unique access codes.(73) These e-mail messages could only be revealed to other practitioners, if relevant to their medical decision making, with patient consent.(74) When information that originated in an e-mail dialogue bears directly on a patient's history, diagnosis, treatment course, adverse reaction or other major event typically noted in the record, a practitioner should summarize that event or information and note it elsewhere in the general medical record.(75) Without such additional security precautions, patients may feel too constrained and fearful to write meaningful communications by e-mail, in turn discouraging this communication method from developing in the medical field.

V. HEALTH INFORMATION PRIVACY AND CONFIDENTIALITY IMPLICATIONS OF MEDICALLY RELATED E-MAIL

A. CONSTITUTIONAL CONCEPTIONS OF PRIVACY

Health information privacy standards are currently in an unsettled state.(76) Even though commentators have acknowledged the sensitive nature of health information and discussed the implications of disclosure,(77) few legal protections exist for shielding medical information from the purview of those outside of the traditional patient-physician relationship.(78) Tensions between public health and individual interests have generated fiercely contested proposals, but no satisfactory conclusions.(79) Although the doctor-patient relationship implies significant privacy expectations to patients and physicians,(80) these expectations do not translate into absolute protections because the law can only deter but not prevent information from being released. Under present formulations, constitutional privacy protections are divided into several categories, separating information privacy from decision making, criminal or associational privacies.(81) Although these distinctions may be useful generally to discern those legal principles that ought to apply to health data, they may preclude a more nuanced analysis of privacy protections which draws from their historical unity.(82) Indeed, by examining the interconnections between decision making and informational privacy interests, the use of medically related e-mail provides a unique example of a situation that is potentially entitled to dual privacy protections: e-mail is both the medical decision-making process at work and the record of those medical encounters.

Historically, legal scholars envisioned privacy as the right to control the "expression of one's personality or personhood."(83) In an 1890 law review article, Louis Brandeis and Samuel Warren first delineated the right to privacy, originally basing the right on tort concepts, such as trespass.(84) The early privacy right employed a cluster of legal rights, which similar to defamation, protected against injury to "personality," and allowed an individual's common law right to control "to what extent his thought, sentiments, and emotions shall be communicated to others."(85) Indeed, as faster, more efficient printing presses were introduced and gossip became a trade, legal protections of personal privacy began to coalesce and strengthen. (86)

Likewise, as medical technology improved birth control methods, then existing notions of privacy were tested. With its 1965 decision in Griswold v. Connecticut,(87) the U.S. Supreme Court advanced a constitutional "right to privacy."(88) The Griswold Court recognized that certain decisions were so personal that they required special safeguarding against any government interference.(89)

Another technological advancement, the telephone, led to further privacy concerns and, eventually, protections. Because the telephone was not immediately considered as providing a private means for communication because of operators, party lines and public phones, it is hardly surprising that early cases did not recognize a privacy interest in its use.(90) By the mid-twentieth century, as a result of an increased use of private lines, most Americans believed their telephone conversations were private.(91) At the same time, a majority of American courts were recognizing some version of a right to privacy.(92) By 1967, the U.S. Supreme Court affirmed a privacy

interest in telephone conversations, even in the face of government wiretapping to uncover illegal activities(93) A newly emerging social reconstruction of privacy was taking shape during the 1960s and 1970s, which demanded a formal legal structure for the right. As one commentator noted, "[p]rivacy has metamorphosed from an issue of societal power relationships to one of strictly defined legal rights."(94)

By 1973, prompted again by changes in technology, the U.S. Supreme Court transferred these newly articulated legal privacy protections directly to a medical setting with its decision in Roe v. Wade.(95) Arguably, this and other later decisions confirm that the right to privacy protects the patient-physician relationship in fundamental ways.(96)

Even though this constitutional evolution affirms a basic right to a private interaction with a physician, it does not necessarily protect the methods of communication used to facilitate the interaction, nor the actual communications themselves--even though many recognize medical communication as "the most central aspect of the doctor-patient relationship."(97) Legal mechanisms to safeguard "medical secrets"--including both the modes of communication and the communications themselves--are not generally based in constitutional law because these relationships typically do not involve government actors.(98) Instead, these protections are often found in the physician's duty to maintain a patient's confidentiality. Nonetheless, it is not unreasonable to assert a constitutional right to privacy in medical communications, if not in the full medical record, by extending some of the acknowledged principles of medical decision-making privacy.(99)

Privacy protections granted in the context of medical decision-making may also include the information that a practitioner collects about an individual during a medical encounter.(100) Although the constitutional privacy interests enunciated in the medical decision-making and informational privacy cases are currently far from absolute, technological innovation once again has forced a reexamination of privacy's boundaries, as computerized communication and record keeping have become routine in medical and public health practice.(101) Indeed, in the twenty-two years since the U.S. Supreme Court first analyzed the issue of medical information databases, innovations in computer technology--including data storage, transfer and access--and reconfiguration of health care delivery and reimbursement have so radically altered the privacy landscape that novel approaches to protecting health information will undoubtedly emerge.

In 1977, "the personal computer arrived in the public consciousness...."(102) That same year, in Whalen v. Roe, the U.S. Supreme Court evaluated whether a computerized public health database, which included identifiable health information pertaining to prescription drug use, violated individuals' privacy interests.(103) A group of physicians and patients challenged a New York law that required copies of prescriptions for substances with a high likelihood for abuse be submitted for storage in a computer database.(104)

The plaintiffs argued that the law violated the physician-patient relationship, contending that this relationship fell within constitutional zones of privacy.(105) Although the Court found no privacy violation under the Whalen facts,(106) it acknowledged the "threat to privacy implicit in the accumulation of vast amounts of personal information in computerized data banks...."(107) The Court recognized that sufficient precautions, such as special policies against public disclosure (computer coding) and other technological barriers, are required to protect personal information against unnecessary public exposure and dissemination.(108)

Even though the Court rejected the argument that any type of privacy was violated in Whalen, it analyzed the possibility that both informational and decisional privacy might be implicated in the context of constructing and maintaining medical records.(109) Although the Court stated that the collection and storage of health information in an "off-line," centralized computer in 1977 did not intrude on patient privacy,(110) current interactive electronic communications over the Internet or via network connections may require additional privacy protections.(111) Medically related e-mail indeed may implicate both informational and decisional privacy, because e-mails are at the same time both medical records and representations of health care relationships.(112)

Stored e-mails, for example, could contain health-related data that might be embarrassing if disclosed publicly. Yet, as Whalen notes, "disclosures of private medical information to doctors, to hospital personnel, to insurance companies, and to public health agencies are often an essential part of modern medical practice even when the disclosure may reflect unfavorably on the character of the patient. (113) Current e-mail use and storage, however, can be distinguished from the Whalen situation in several crucial ways. First, public health data collection would not be impeded by granting individual patients a legitimate expectation of privacy in their medical e-mails. Public health data could be collected in the usual manner, even if the patient or the physician became aware of the reportable condition via e-mail message. Thus, an individual's privacy interest need not be balanced against public health interests. Second, the tightly controlled security precautions envisioned in Whalen may not exist where e-mail is transmitted over insecure lines and could be accessed, forwarded, stored or printed by any number of unforeseen computers and people, whether or not certain security systems are in place. The Whalen Court explicitly notes that the computer system in that case was maintained "off-line" so that "no other terminal outside of the computer room can read or record information" while the data was accessed.(114) Currently, many internally isolated e-mail systems are protected from invasion by external computers, but most clinical e-mail is stored on personal terminals by both patients and their health care practitioners. Such terminals could potentially expose their stored e-mails to external view, intentionally or inadvertently, when their users go online. Third, some medical e-mail, such as messages written by patients to their physicians, may contain sensitive personal expressions of self, thoughts and feelings that deserve more privacy protection than even the health data described in Whalen.

Indeed, e-mail messages between patients and their physicians are more than just medical information, because "[e]-mail communications are not merely virtual approximations of medical practice, [but] are very real exchanges of information, advice, and emotions."(115) Correspondingly, e-mail transmissions are part of an ongoing conversation about one's health care. This is precisely the type of patient physician interaction that is necessary for formulating opinions, sharing information and ultimately making medical decisions. In this way, e-mail communications between physicians and patients are distinct from the database maintained for record storage in Whalen, since patients might actually make medical decisions over e-mail. In Whalen, the plaintiffs argued that decisional privacy ought to be invoked because "the knowledge that the information is readily available in a computerized file creates a genuine concern that causes some persons to decline needed medication."(116) Similarly, with e-mail people also might refrain from making certain decisions about their health care over e-mail because they may fear that their e-mails may be misdirected or mishandled, revealing personal thought process to unforeseen people. However, e-mail use between patients and health care practitioners is even more deserving of privacy protection because it is as aspect of the already protected privacy interest in communication within the physician-patient relationship. Indeed, information conveyed via e-mail is the direct result, and synchronous evidence of, the patient-physician relationship.(117) In fact, it is the record of the communication itself. As such, e-mail use between patients and health care practitioners requires at least the same privacy safeguards already afforded to communications within the doctor-patient relationship. Indeed, in Rust v. Sullivan,(118) Justice Blackmun's dissent acknowledged the centrality of medical communication, declaring that "the doctor-patient dialogue embodies a unique relationship of trust ... [and, therefore,] we have guarded so jealously the doctor-patient dialogue from governmental intrusion."(119) Here, only the medium of communication has changed. Whereas Rust described a face-to-face oral dialogue, an e-mail conversation can be stored electronically and is similarly a direct product of the physician-patient relationship and, therefore, should enjoy equally strong protections.

E-mail is the latest communication technology to challenge and explore the traditionally understood boundaries of privacy. Historically, privacy protections have been extended beyond traditional bounds when novel technologies restructure relationships. (120) As Ken Gormley observes, "[c]hanges in American society and technology which threaten to invade the status quo and rearrange the line of demarcation between citizen and state, and citizen versus citizen, are prime candidates to generate new privacy rights."(121) Medical e-mail may be uniquely situated at the intersection of medical decision making and medical information storage to warrant extended privacy protections.(122)

B. COMMON LAW AND STATUTORY PRIVACY PROTECTIONS

Absent assurances of constitutional protection, medically related e-mail is vulnerable to exposure as a medical record unless legislatures

enact further medical records privacy protections. Although constitutional approaches to privacy indicate a fundamental expectation of privacy in medical encounters, they apply only to government action and are not sufficient to protect patient privacy from private interference.(123) Currently, no uniform legal protection guarantees privacy in medical records.(124) A variety of state common law and statutory remedies offer patients their only remedy when medical records are exposed.(125) Thus, familiar causes of action, such as breach of confidentiality, invasion of privacy, breach of contract, and breach of fiduciary relationship, form the bases for legal action against practitioners who unreasonably publicize medical information.(126) These state actions implicate particular practitioners who have breached a duty to their individual patients by exposing information, but they do not go far enough in providing an expectation of privacy in the record itself, regardless of who holds it.(127) Even though several states have enacted a variety of specific privacy provisions for medical information,(128) a uniform system, which may be necessary for health communication over the Internet, can only emerge under federal law.(129)

Federal privacy protections have evolved to protect other kinds of data.(130) Specifically, federal privacy protection has been extended by statute to telephone and other communications. The Electronic Communications Privacy Act of 1986 (ECPA),(131) for example, amended existing statutes intended to prevent government eavesdropping over private telephone lines.(132) In particular, Congress extended privacy protection to digital communications like e-mail.(133) The ECPA, however, can perform only a limited role in assuring the privacy of medically related e-mails.(134) For instance, even though the ECPA assesses civil and criminal penalties for the unlawful interception of e-mail messages, whether stored or in transit,(135) it cannot necessarily prevent the message's contents from being disseminated once the message theft has occurred.(136) Remarkably, the ECPA also contains a limited exemption for providers of wire or electronic communication service, which might include employers.(137) Accordingly, most e-mail users cannot expect privacy in their messages because employers and online services retain the right to archive and inspect messages transmitted through their systems.138 Further, the ECPA would not necessarily protect stored e-mail from being transmitted, forwarded or copied once they become part of a medical record.139 For example, a medical record that contained e-mail text could be transmitted to a person or organization known by the sender, and no unlawful transmission would take place.(140) Nonetheless, a patient may be unaware of the third party's identity and have no recourse under the ECPA.

In certain cases, federal law, including the Privacy Act of 1974(141) and the Freedom of Information Act (FOIA),(142) protects medical records. FOIA allows public access to certain government data, but delineates nine categories of exemptions that would preclude disclosure of personal information for commercial use.(143) Included in the FOIA exemptions are personnel and medical files.(144) The Privacy Act likewise protects personal information gathered and maintained by the government.(145) In the medical setting, the

Privacy Act covers, among other entities, federal institutions, Medicare and Medicaid programs maintained by a federal agency, insurance companies acting as intermediaries for the Medicare program and hospitals maintaining medical records under a government agency contract.(146) The Privacy Act delineates "fair information practices" that the government must follow when it collects, uses or disseminates personal records.(147) These requirements include obtaining prior written consent, providing an opportunity to review and correct personal information and limiting the scope of the record to only the relevant and necessary data. (148) Arguably, medical e-mail is beyond the boundary of relevant data, particularly if the condition or situation discussed in the e-mail is reiterated elsewhere as a clinical finding or diagnosis, and thus it should not be accessible in a government medical record.(149)

Despite attempts at defining the boundaries of private communication methods with measures like the Privacy Act and the ECPA, the transmission and storage of e-mail messages still leaves patients vulnerable to potential exposure of embarrassing information, even if the person responsible for the disclosure is punished. Moreover, once the message becomes a part of the medical record, it may lose some of its protections under current statutes and remain susceptible to revelation to unforeseen parties given the present state of medical records privacy laws.(150)

C. PHYSICIAN'S DUTY TO MAINTAIN CONFIDENTIALITY OF MEDICAL INFORMATION

In most states, physicians and some other health care providers have a legal obligation to protect medical information from unnecessary and unauthorized disclosure.(151) The legal standard for breach of confidentiality is often derived from prevailing professional ethics codes, whether the case is brought under an implied contract, fiduciary duty or invasion of privacy theory.(152) The American Medical Association (AMA), for example, explicitly delineates elements of a physician's obligation to provide a confidential relationship, absent a legal or therapeutic directive to disclose information to a third party.(153) The AMA, like other policymakers, acknowledges that the basis for maintaining confidentiality is to ensure a trusting, honest and open therapeutic relationship in which patients feel comfortable exposing their private concerns.(154) Indeed, the AMA interprets the physician's duty to uphold patient confidentiality broadly, asserting that "information disclosed to a physician during the course of a relationship between physician and patient is confidential to the greatest possible degree. The physician should not reveal confidential communications or information without the express consent of the patient...."(155)

Because of the duty to protect patient confidences, individual physicians will be required to insulate their patients' e-mails from public view.(156) To protect patient data generally, and e-mail specifically, a physician's duty to guard confidentiality must involve more than a pro forma awareness.(157) Rather, physicians and other health care professionals should take precautions to secure patient-related e-mail both through enhanced technological security

and clearly defined and observed office practices.(158) Notably, the AMA advises physicians that:

> [t]he computerized medical database should be on-line to the computer terminal only when authorized computer programs requiring the medical data are being used. Individuals and organizations external to the clinical facility should not be provided on-line access to a computerized database containing identifiable data from medical records concerning patients.(159)

Of course, this proscription directly relates to clinical e-mail use because both physicians and patients are likely to transmit and receive medical records information from remote terminals.

VI. INFORMED CONSENT FOR USE AND TRANSFER OF MEDICAL INFORMATION

Informed consent for medical procedures is a well-established legal doctrine in tort law. Patients must be apprised of the potential risks and benefits of a proposed procedure and its alternatives and agree to allow the physician to act according to a particular medical plan.(160) Physicians owe their patients this duty to inform so that patients can become full participants in the medical decision-making process and control the types of bodily invasions or chemical alterations that the patient is willing to accept.(161)

Informed consent for release of medical information has likewise become a standard feature of modern medical practice.(162) Except for instances of state-mandated reporting of medical information, such as suspected child abuse, drug abuse, sexually transmitted diseases or industrial accidents, patients must consent to the release of their medical records pursuant to state laws.(163) Most states require such releases to be written, signed documents expressly authorizing the transfer of a particular portion of medical records from one record holder to another.(164) Patient consent can be presumed in certain circumstances, for example, in an emergency setting or for routine organizational quality assurance reviews that take place internally.(165) Likewise, patients who situate their medical condition at the center of a legal dispute, such as in a medical malpractice or occupational injury claim, automatically waive their right to shield their medical records from view.(166) Significantly, in most states third-party payers cannot receive medical information without patient consent;(167) of course, they are not required to render payment or reimbursement without reviewing the applicable medical records.(168)

As others commentators and legislators have pointed out, the current medical system cannot adequately sustain the special confidential relationship between physician and patient.(169) Many others outside the bounds of the patient-physician relationship retrieve, review and amplify the patient record.(170) Indeed, despite the original understanding that the physician would assure complete confidentiality regarding the patient's medical encounter and its written summary, the medical record will likely be seen by many other participants in the medical industry, including insurers, hospitals, state regulators and other government or private organizations involved in processing medical billing and approval of procedures,(171) Not every person or entity entrusted with the

medical record owes the patient a legal duty of confidentiality, although most such entities assure patients informally that they handle medical information using confidential procedures.(172) Additionally, and somewhat surprisingly, "health care information is frequently transferred into the hands of secondary users, like pharmaceutical companies.(173)

Even before considering informed consent for using e-mail or electronic record storage, the manner of obtaining informed consent for generating medical records more generally must be evaluated. Beyond explicit legal requirements to obtain signed releases before releasing medical information, health care practitioners ought to discuss with their patients the scope of foreseeable uses of the records generated by their care.(174) Accordingly, one commentator argues that "[t]he physician would appear to have a duty to tell the patient how information is handled in both office and hospital settings, who generally has access to the records, and how hard or easy it is for others to obtain the information."(175) This kind of dialogue is significant because it may better inform patients about the sort of privacy and confidentiality they can expect within the vast institutional networks of health care and payment industries.(176) Likewise, patients could indicate what types of information they would prefer to have excluded from this "public" written record. With this information, patients could, in turn, express personal preferences concerning who might be privileged in gaining access to their medical record and who might not.(177) To formalize the process, the patient's preferences could be noted in the written record(178) or incorporated into a separately drafted "letter of understanding" to be signed by patients as a reflection of their control over the flow of personal medical information. Even the AMA suggests that the "patient and physician should be advised about the existence of computerized data bases in which medical information concerning the patient is stored.... Full disclosure of this information to the patient is necessary in obtaining informed consent to treatment."(179)

Accordingly, e-mail use requires a similar discussion about its risks and a written consent to use it in medical communication.(180) Consent procedures have become a routine part of a telemedicine consultation;(181) similarly, practitioners should advise their patients about the privacy implications of using e-mail within the clinical setting. Patients and physicians may decide to negotiate a variety of acceptable and unacceptable e-mail uses. For example, some patients will want to limit e-mail use to administrative messages, including scheduling appointments, specialty referrals and prescription refills. Others will agree to wider ranges of uses; still others will decide not to permit any e-mail interaction within their medical relationships. Just as other medical information can only be released, retained or transmitted with a patient's consent and signed release, medical e-mail should only be used after a patient has been informed of potential risks and benefits and signed a formal "e-mail consent" form.(182) Despite arguments that a physician may infer consent if a patient initiates e-mail contact,(183) physicians should not assume that patients who use e-mail in other settings understand the implications of its use in the medical context.(184)

Indeed, physicians have no special knowledge of their patients' preferences and attitudes toward medical information privacy; to continue to use e-mail without informing patients of risks, and obtaining evidence of that discussion in written consent, is a type of medical paternalism.(185)

VII. E-MAIL AS TELEMEDICINE AND E-MAIL MALPRACTICE

Medical e-mail communications not only implicate issues in the areas of medical records privacy and patient autonomy, but also trigger an analysis under established telemedicine laws and procedures.(186) Indeed, while specific medical e-mail legislation has not emerged at the federal level, Congress has included e-mail within the definition of "telemedicine" used in general telemedicine legislation.(187) The Institute of Medicine has defined telemedicine to encompass telephone, video and electronic transmission of medical information using telephone or digital technology.(188) Likewise, the AMA supports a broad telemedicine definition that includes "medical practice across distance via telecommunications and interactive video technology."(189)

Telemedicine, then, is not a novel construction, because physicians have consulted by telephone for many years.(190) Only recently with the expansion of the Internet and the reliable application of videoconferencing technologies has the concept of telemedicine generated practitioners' and policymakers' interest for its potential to provide real-time access to medical care, particularly in rural areas or for disabled patients who find travel difficult.(191) However, other commentators, practitioners and policymakers view the vast infrastructure investment as a drain on already scarce medical resources.(192)

Once practitioners understand that e-mail consultation is a type of telemedicine, they must confront those legal issues that follow from any telemedicine application; namely, consent, reimbursement, licensing and liability.

A. CONSENT

As discussed in Part VI, informed consent is crucial to protect patients from unauthorized and unforeseen uses of their medical information. Any telemedicine interaction, accordingly, requires informed consent not only because medical information might be obtained, transmitted or stored during the telemedicine consultation, (193) but also because patients are engaging in a specific medical procedure. In essence, a telemedicine encounter is somewhat experimental because very little evidence exists to demonstrate its clinical effectiveness or safety.(194) In particular, commentators have identified e-mail "psychotherapy" as experimental, because no studies have been undertaken to demonstrate its parity to face-to-face psychotherapy in terms of effectiveness, satisfaction and outcome.(195) As such, all telemedicine consultations should include an informed consent process so that patients understand the inherent risks and benefits of communication technologies and record keeping and their impact on the therapeutic relationship with

potential caregivers.

B. REIMBURSEMENT FOR TELEMEDICINE CONSULTATIONS: IS E-MAIL COVERED?

Government proposals have recently emerged that address reimbursement for limited types of telemedicine interactions.(196) Federal demonstration projects are underway to assess the cost of continuing to expand reimbursement practices to other areas of telemedicine, potentially including face-to-face consultations that are currently not covered by federal insurance programs.(197) Until the Health Care Financing Administration completes its cost assessments, "few private insurers or managed care organizations will cover teleconsultations."(198) Although some states have initiated their own pilot programs promoting telemedicine reimbursement,(199) many practitioners feel uncomfortable about charging for such "virtual visits," believing that payment could signify a professional duty to the patient and leave the practitioners vulnerable to liability if harm occurs.(200)

Since neither public nor private insurers have wholeheartedly embraced telemedicine generally as a legitimate, cost-effective and reliable therapeutic modality that deserves reimbursement, e-mail consultations will likely not receive reimbursement. This is consistent with traditional medical practice, in which neither telephone calls nor letters are reimbursed. Unlike attorneys and other professionals, physicians have not traditionally billed their patients according to the amount of time spent consulting, analyzing or summarizing patient care. Although a minority of practitioners have periodically suggested a reimbursement scale for physician-patient telephone calls, this practice has never been adopted as a general standard.(201) Furthermore, even states that allow reimbursement for a specified range of telemedicine services may opt to exclude coverage for telephone calls, and by extension or explicit provision, e-mail exchanges.(202) Accordingly, electronic communication between physicians and patients, including e-mail, would not be subject to billing or reimbursement procedures.(203) Unless insurers require e-mail consultation under specific circumstances or, conversely, seek to dissuade patients from contacting physicians by any means, e-mail exchanges within the physician-patient relationship will remain uncompensated connections.(204) As a result, this may further solidify the integrity and depth of a particular medical relationship because patients may appreciate the perception of expanded direct access to their physician.

C. TELEMEDICINE AND STATE LICENSING: IMPLICATIONS FOR E-MAIL CONSULTATION

Prior to engaging in an electronic consultation with or about patients, physicians should be aware of potential licensing issues, particularly when interacting across state lines. Because individual states determine policy on licensure to practice medicine within state boundaries, a practitioner with a license in one state may be at risk of violating another state's licensing laws when engaging in consultation, diagnosis or treatment in the distant state.(205)

Indeed, it may be possible to engage in the practice of medicine without a license simply by using e-mail to treat a patient in a state that does not recognize the treating physician's license.(206)

Although some states allow the historically sanctioned "consultation exception" for communications between physicians in different states,(207) "most states require a physician to obtain a full license in order to practice within that state...."(208) Because of the proliferation of telemedicine, some states have begun to consider the implications of allowing out-of-state physicians to conduct electronic medical appointments.(209) Some states prohibit unlicensed telemedicine explicitly, others have enacted a limited telemedicine exception to their licensing statutes, while a few others have proposed that physicians obtain limited licenses for telemedicine practice only.(210) To facilitate the growth of telemedicine, many industry leaders and policymakers have suggested that a national licensing system should supplant the patchwork of state laws, but there is little evidence that such a national licensing scheme would be crafted within the near future.(211) Accordingly, even in cyberspace, physician and patient physical location may determine legal guidelines for both medical licensure and legal jurisdiction. (212)

D. TELEMEDICINE LIABILITY: DEVELOPMENT OF E-MAIL PRACTICE STANDARDS

Although appropriate physician licensing and sufficient patient consent can deter many potential malpractice actions for telemedicine exchanges, physician adherence to pertinent traditional standards of good medical practice provides the basis for an emerging telemedicine liability analysis.(213) Likewise, "[t]o avoid falling short of the required standard of care, however, telemedicine must provide a substitute of sufficient quality for the traditional medical process it seeks to replace."(214) Leaving aside issues of potential liability for failure of technological equipment, potential liability for telemedicine consultations depends entirely on physician judgment and action. Clearly, when a physician communicates to a patient by e-mail, that physician should not rely on any less information than a face-to-face consultation would require in conducting the medical assessment because the standard of care remains the same.(215) Nonetheless, no cases of telemedicine or email malpractice have yet appeared.(216)

Medical malpractice actions require the existence of a doctor-patient relationship as the basis for the physician's legal duty toward the patient.(217) In assessing whether a doctor-patient relationship exists, when it cannot be inferred from the context of an existing and ongoing relationship, physicians and patients using e-mail may draw analogies from cases delineating the scope of the doctorpatient relationship in telephone consultations.(218) Although a mere telephone conversation between a physician and a potential patient, or consulting physician, does not necessarily form a doctor-patient relationship sufficient to base a malpractice claim,(219) once the physician offers advice by telephone, a relationship is established. (220) Accordingly, physicians who participate in e-mail consultation

with their ongoing patients will likely satisfy the threshold requirements necessary to establish a doctor-patient relationship and its attendant duty of care.(221)

The specific standards to which clinical e-mail users must adhere are still emerging.(222) By analogizing to telephone practice, however, it is likely that a reasonable response time for patient e-mail inquiries will be among the first standards patients will want physicians to delineate. Indeed, because a physician may be negligent for failing to return a patient's telephone call during a reasonable period,(223) physicians who use e-mail ought to set explicit expectations for likely email response time. Other standards, such as determining whether sensitive topics or test results ought to be revealed by e-mail or whether physicians should use an encryption program for all patient e-mail, will develop according to patient preference, a physician's duty to preserve confidentiality and privacy and legislative or common law principles.

VIII. EMERGING LEGISLATION AND GOVERNMENT INITIATIVES

A variety of recent proposals and newly effective laws address medical records privacy and telemedicine, though few explicitly offer guidance for clinical e-mail users. For example, though legislators have repeatedly proposed broad medical records privacy legislation, (224) medical communication is often overlooked.(225)

However, many legislative initiatives arguably include medical communications within their scope. For example, the Health Insurance Portability and Accountability Act of 1996(226) requires new electronic data security standards to protect the integrity of health information.(227) By extension, then, providers, insurers and health care businesses must take specific precautions to preserve the integrity and security of any health data that is not only stored, but also that might be transmitted. Providers and insurers are now obligated to take affirmative technological and physical precautions against data interception during transit.(228) Though these standards apply only to providers, insurers and government agencies when transmitting information among themselves, it is quite possible that these same standards will apply, absent explicit waiver, when providers communicate directly with patients about their health care.

IX. CONCLUSION

As enthusiasm for e-mail use increases, more physicians will be called to the virtual bedside of patients eager for information and advice. A physician's response should be guided by the ethical and legal considerations that apply to all facets of the patient-physician relationship. Therefore, policy or legislative initiatives for medical records privacy and health information security should explicitly address patientcentered communication with health care professionals and require that patient autonomy, safety and privacy be maintained when the patient-physician relationship is electronically extended or enhanced. In turn, policymakers should ensure that physicians apprise patients of the privacy implications and inherent risks of e-mail communication as part of an informed e-

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...CLAIMS the carrier to destroy the mail.
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      carrier to recycle the material comprising the□mail□ .
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PATENT (CC, No, Kind, Date):  EP 1246134  A1  021002 (Basic)
APPLICATION (CC, No, Date):   EP 2002006682 020326;
PRIORITY (CC, No, Date): US 818800 010327
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G07B-017/00

ABSTRACT EP 1246134 A1
    A method that enables the recipient to receive notification of the
  letters, flats and/or packages (mail) that the recipient is going to
  receive prior to the delivery of the mail. The recipient is then able to
  inform a post or courier i.e., Federal Express(R), Airborne(R), United
  Parcel Service(R), DHL(R), etc., of the manner in which the recipient
  would like the mail delivered. The post and courier hereinafter will be
  referred to as "carrier". The invention also allows the carrier to
  uniquely identify each piece or parcel of mail (even if they are from the
  same sender to the same recipient on the same day) so that the mail may
  be more easily identified by the carrier, sender and the recipient. For
  instance, the recipient may want the mail physically delivered to their
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house faster or slower, or the mail physically redirected to the recipient's temporary address, or physically delivered to the recipient's agent, or physically delivered to the recipient's attorney, or physically returned to the mailer, or have the carrier open the physical mail and have the carrier e-mail or fax the contents of the mailpiece to the recipient and/or parties designated by the recipient.

ABSTRACT WORD COUNT: 196

NOTE:

Figure number on first page: 2

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application:	021002	A1 Published application with search report
Search Report:	021002	A1 Date of dispatch for correction to the search report: 20020626
Examination:	030528	A1 Date of request for examination: 20030328

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200240	923
SPEC A	(English)	200240	4471
Total word count - document A			5394
Total word count - document B			0
Total word count - documents A + B			5394

SPECIFICATION EP 1246134 A1

The invention relates generally to the field of mail delivery systems and, more particularly, to systems that may deliver mail by physical and/or electronic means.

People have directly transmitted information from one person to another. Information was first transmitted by spoken word and later by the written word. Writings enabled people to transmit information by messengers from a location in which the sender of the writing was present to another location where the receiver was present. In time, postal services were developed in which a person would deliver letters to the post office in one city, and an agent of the post office would deliver that letter to a post office in another city, where the letter mail would be picked up by the person to whom the letter was sent.

Ever since the numeric codification of streets and buildings received general acceptance, an individual's name and household postal address have been linked. The sender of a letter or package would deliver a letter or package to the post that had the correct recipient postal address, and the post would deliver the letter or package to the numeric street address of the recipient of the letter or package. A correct recipient postal address for the delivery of the letter or package to the recipient included the name of the recipient; the street address of the recipient; the city and state of the recipient; and the zip code of the recipient. Thus, the correct recipient postal address is usually the actual location of the recipient.

Typically, it takes the post three to five days to deliver letters and/or packages to a recipient. Sometimes, recipients of letters and packages like to know what letters and packages they are going to receive before they receive them. For instance, if someone is going on a trip, they may want to receive their bills, i.e., credit card, electric, gas, oil, hospital, doctor, etc., before they leave on the trip so that they may pay the bills before a finance charge for late payment of the bill is applied to their account. Someone may also want to receive a package before they go on a trip so that they may take the contents of the package on the trip. The recipient may also want to delay delivery of a particular letter or package until they return from their trip. The reason for the foregoing may be that the recipient does not want to

retrieve the letter or package at the post office or have the letter or package waiting at a vacant house.

This invention overcomes the disadvantages of the prior art by providing a method that enables the recipient to receive notification of the letters, flats and/or packages (mail) that the recipient is going to receive prior to the delivery of the mail. The recipient is then able to inform a post or courier i.e., Federal Express(R), Airborne(R), United Parcel Service(R), DHL(R), etc., of the manner in which the recipient would like the mail delivered. The post and courier hereinafter will be referred to as "carrier". The invention also allows the carrier to uniquely identify each piece or parcel of mail (even if they are from the same sender to the same recipient on the same day) so that the mail may be more easily identified by the carrier, sender and the recipient. For instance, the recipient may want the mail physically delivered to their house faster or slower, or the mail physically redirected to the recipient's temporary address, or physically delivered to the recipient's agent, or physically delivered to the recipient's attorney, or physically returned to the mailer, or have the carrier open the physical mail and have the carrier e-mail or fax the contents of the mailpiece to the recipient and/or parties designated by the recipient.

This invention accomplishes the foregoing by depositing with the carrier mail containing the recipient's name and physical address and the sender's name and address; placing a unique number on the mail; capturing the name, physical address of the recipient and the sender, and the unique number; translating the name and physical address of the recipient into an e-mail address; notifying the recipient of the availability of the deposited mail by the unique number assigned to the mail; notifying the carrier of the manner in which the recipient would like the mail delivered; and delivering mail to the recipient in the manner specified by the recipient to the carrier.

Fig. 1A is a drawing of a metered mailpiece;

Fig. 1B is a drawing of a permit mailpiece;

Fig. 1C is a drawing of a stamped mailpiece;

Fig. 1D is a drawing of a flat or package that is going to be delivered by a carrier;

Figs. 1A-1D show various methods of evidence for the payment of postage. It will be obvious to one skilled in the art that additional methods of evidence for the payment of postage exist;

Fig. 1E is a drawing of a metered mailpiece, that has been metered with a digital meter that affixes a unique number to the mailpiece;

Fig. 1F is a drawing of a metered mailpiece, that has been metered with a personal computer meter that affixes a unique number to the mailpiece;

Fig. 2 is a drawing showing how this invention may be used by a post in the processing of letter mail;

Fig. 3 is a drawing showing how this invention may be used by the post and/or a courier in the processing of flats and packages;

Fig. 4 is a drawing of the information that appears on one or more of receiving devices 36 and

Fig. 5 is a drawing of major mailer site 90.

Referring now to the drawings in detail and more particularly to Fig. 1A, the reference character 11 represents a mailpiece that has a sender address field 12, a recipient address field 13 and a postal indicia 14. Mailpiece 11 also contains a unique number 110. Unique number 110 may be in the form of numbers, letters or alphanumeric characters. Number 110 may also take the form of a unique bar code or other coded graphic. Number 110 is affixed to mailpiece 11 by the post. The manner in which number 110 is affixed to mailpiece 11 hereinafter will be described in the description of Fig. 2.

Fig. 1B is a drawing of a permit mailpiece. Mailpiece 15 has a sender

address field 16, a recipient address field 17 and a permit 18. Mailpiece 15 also contains a unique number 110. Unique number 110 may be in the form of numbers, letters or alphanumeric characters. Number 110 may also take the form of a unique bar code or other coded graphic. Number 110 is affixed to mailpiece 15 by the post. The manner in which number 110 is affixed to mailpiece 15 hereinafter will be described in the description of Fig. 2.

Fig. 1C is a drawing of a stamped mailpiece. Mailpiece 19 has a sender address field 20, a recipient address field 9 and a stamp 10. Mailpiece 19 also contains a unique number 110. Unique number 110 may be in the form of numbers, letters or alphanumeric characters. Number 110 may also take the form of a unique bar code or other coded graphic. Number 110 is affixed to mailpiece 19 by the post. The manner in which number 110 is affixed to mailpiece 19 hereinafter will be described in the description of Fig. 2.

Fig. 1D is a drawing of a flat or package that is going to be delivered by a carrier. Package or flat 40 has a label 39 affixed thereto. Label 39 has a sender address field 41, a recipient address field 42 and may have other sender information, i.e., the sender's phone number 44. Indicia 43 is affixed to label 39. Indicia 43 may be a postal indicia or courier symbology. Package 40 also contains a unique number 111. Unique number 111 may be in the form of numbers, letters or alphanumeric characters. Number 111 may also take the form of a unique bar code or other coded graphic. Number 111 is affixed to package or flat 40 by printer 121 (Fig. 3) or preprinted on label 39.

Fig. 1E is a drawing of a metered mailpiece that has been metered with a digital meter that affixes a unique number to the mailpiece. Mailpiece 113 has a sender address field 114 and a recipient address field 115. A metered indicia 112 is affixed to mailpiece 113. Indicia 112 contains a unique number 135.

Fig. 1F is a drawing of a metered mailpiece that has been metered with a personal computer meter that affixes a unique number to the mailpiece. Indicia 139 may be a two dimensional bar code 140, that may contain unique number 141.

Fig. 2 is a drawing showing how this invention may be used by a post in the processing of letters. Letter mail that is deposited in trays 6 and delivered to the post is read by reader 23. Collection letter mail may be metered letter mail that is produced at a mailer site 7 or a sender household 8 by a postage meter or a personal computer meter; stamped mail; or permit mail. Collection letter mail is placed in collection mail input 21, i.e., mail boxes or delivered to the United States Postal Service unsorted. Collection letter mail is sent to advanced facer canceller (hereinafter "AFCS") 22. AFCS 22 first faces the letter mail. Then AFCS 22 electronically identifies and separates prebarcoded mail, handwritten addresses and machine-imprinted address pieces for faster processing through automation. A printer 120 or AFCS 22 will print unique number 110 on mailpieces 11, 15 and 19 (Figs 1A, 1B, 1C). Unique number 110 may contain the serial number of printer 120 plus a unit count of the mailpiece printed or the serial number of AFCS 22 plus a unit count of the mailpiece printed. Letter mail that AFCS 22 determines is optical character readable is sent to multi-line optical character reader/code printer (hereinafter "MLOCR") 23. Reader 23 reads the entire address on the letter mail: sprays a bar code on the mail; and then sorts the mail. Letter mail that is able to be scanned and sorted by reader 23 is sent to bar code sorter/code printer 24. Letter mail that the mailer has prebarcoded and contains a facing identification mark is sent to bar code sorter/ code printer (hereinafter "BCS") 24.

Trayed mail 82 (mail in which the sender is entitled to discounts) that is produced at a major mailer site 90 (Fig. 5) is sent to a delivery bar code sorter/code printer (hereinafter "BCS") 25 or a carrier sequence bar

code sorter/code printer (hereinafter "CSBCS") 26. Sorters 25 and 26 sort the letter mail in the order that the mail is going to be delivered by postal carrier 27. Letter mail that AFCS 22 determines is not optical character readable is sent to bar code sorter/code printer 28. Letter mail that AFCS 22 obtains electronic images from and letter mail that reader 23 obtains electronic images from transfers the electronic images to remote bar code system (hereinafter RBCS") 32. System 32 matches the look up zip code for the letter mailpieces from AFCS 22 and merges them. System 32 electronically transmits the bar code information to sorter 28 where the bar code information is sprayed on the mailpieces. Letter mail that is able to be scanned and sorted by sorters 24 and 28 is sent to a delivery bar code sorter 25. Sorters 25 and 26 sort the letter mail in the order that the mail is going to be delivered by postal carrier 27, or hold the mail for recipient diversion for a specified period of time in divert mail options rerouting controller 62.

Letter mail that can not be scanned and sorted by sorters 24 and 28 is sent to letter sort machine (hereinafter "LSM") 29. Letter mail that can be sorted by LSM 29 is sent to postal hand casing 30. Postal hand casing 30 is the process in which the postal carrier sorts the letter mail in the order that the letter mail is going to be delivered by postal carrier 27. Letter mail that can not be sorted by LSM 29 is sent to manual process 31. Manual process 31 attempts to classify the previously rejected mailpiece to: redirect the mailpiece; declare the mailpiece dead; or manually re-code the mailpiece for redelivery. Then the mailpieces that have not been processed in manual lookup and scan sortation process 31 are sent to dead letters 33. In process 31 an operator may determine the address of the recipient and produce a label to be placed on the letter mail. Then the letter mail would go to postal hold casing 30 where the mail is sorted in the order that the mail is going to be delivered by postal carrier 27.

Letter mail that can not be faced and cancelled by AFCS 22 is sent to manual process 31. Manual process 31 attempts to classify the previously rejected letter mailpiece to redirect the mailpiece; declare the mailpiece dead; or manually re-code the mailpiece for redelivery. Then the letter mail that manual process 31 is able to classify is sent to postal carrier casing 30 before it is delivered by postal carrier 27.

RBCS 32 electronically transmits the bar code information that represents the destination of the letter mailpiece and the party to whom the mailpiece is to be delivered and the image of the face of the mailpiece to data center 34. The aforementioned scanners scan all of the information appearing on the face of the letter, i.e., the sender's name and address 12 (Fig. 1A), the recipient's name and address 13 and postal indicia 14. The scanned information is transferred to accept process images 52. Then the information is sent to encode, sort, store 53. At this point, the recipient's physical address is verified by checking postal address database 54, and the recipient's e-mail address is determined from e-mail database 55. Temporary database 56 is then searched to determine whether or not the recipient has left any forwarding addresses. Encode 53 then encodes and sorts the information obtained from databases 54, 55 and 56.

The aforementioned encoded and sorted information is stored in mail image database 57. Then the mail image information is sent to manage mail image 58 where the various options and the costs associated therewith that the recipient may have for delivering the information contained in the letter is determined. Then the mail images and options that the recipient has for receiving the letter is sent to images 59, where the information appearing on the face of the letter in alphanumeric and graphic form and the options in alphanumeric and graphic form the recipient has for receiving the letter are transmitted to receiving device 36 (personal computer, television, facsimile machine, personal

data assistant, etc.), which is located at the recipient's business or household 35. The options that the recipient has for diverting the letter are described in the description of Fig. 4.

The recipient may use device 36 (personal computer, facsimile machine, personal data assistant, etc.) located at the recipient's business or household 35 to inform receive and process user options 61, located at data center 34, of the manner in which the letter mail should be delivered. The recipient may also use a touch tone and/or voice telephone 87 to inform options 61 of the manner in which the recipient would like the letter mail displayed on the receiving device 36, i.e., television delivered. For instance, the recipient may want the letter mail physically delivered to the recipient's house faster or slower, or the letter mail physically redirected to the recipients temporary address, or physically delivered to the recipient's agent, or physically delivered to the recipient's attorney, or physically returned to the mailer, or have the post open the letter mail and have the post e-mail or fax the contents of the letter mail to the recipient and/or parties designated by the recipient.

At this juncture, the recipient may inform options 61 via a device 36 of the manner in which the recipient would like the letter mail processed. Options 61 will then inform the recipient via device 36 of the cost to the recipient to process the letter mail in the manner selected by the recipient. The recipient may then inform the post to deliver the letter mail in the manner selected by the recipient. The recipients selected manner of letter mail processing is forwarded to options rerouting controller 62. If the post specified time to deliver the letter mail has not been reached the letter mail is sent to recipient options 64 and delivered in the manner selected by the recipient in route mail options 65. Then options 65 informs manage mail database 58 to archive the image and also to notify bill sender and pay carriers 66 to bill the recipient and pay the post. At this point the next letter mail image is ready to be processed.

The letter mail may then be delivered to the recipient at mail box 37 at a faster or slower rate than that selected by the sender; held by the post for a specified amount of time and then delivered to an address specified by the recipient; opened, and the contents of the letter mail faxed to recipient's selected fax numbers; opened, and the contents of the letter mail faxed to recipient's selected fax numbers and then the letter mail may be delivered to the physical address specified by the recipient; opened, and the contents of the letter mail e-mailed to recipient's selected e-mail addresses; or opened, and the contents of the letter mail e-mailed to recipient's selected e-mail addresses, and then the letter mail may be delivered to the physical address specified by the recipient. The recipient may also have instructed the post to return the mail to the sender, to destroy the mail, or to recycle the paper in the letter mail. Options 61 will also send the cost of the recipient selected manner of delivery to bill recipient 66 so that data center 34 may inform the post to debit the recipients account or send a bill to the recipient.

Fig. 3 is a drawing showing how this invention may be used by a post or courier in the processing of packages and flats. Packages and flats are deposited with the carrier at 50. Printer 121 will print unique number 111 on label 39 of the package or flat (Fig. 1D). Unique number 111 may contain the serial number of printer 121 plus a unit count of the number of unique numbers printed by printer 121. Packages and flats are scanned by scanner/coder 51. Scanner/coder 51 scans all of the information appearing on the face of the package or flat, i.e., (from Fig. 1D) the sender's address 41, the sender's phone number 44, the recipient's address 42 and courier symbology 43. The scanned information is coded, formatted and sorted, and the physical flat or package is sent to

internal routing for physical delivery of the package or flat 63. The aforementioned information is transferred to accept process images 52, which is located at data center 34. Then the information is sent to encode, sort, store 53. At this point, the recipient's physical address is verified by checking postal address database 54, and the recipient's e-mail address is determined from e-mail database 55. Temporary database 56 is then searched to determine whether or not the recipient has left any forwarding addresses. Encode 53 then encodes and sorts the information obtained from databases 54, 55 and 56.

The aforementioned encoded and sorted information is stored in mail image archive database 57. Then the package or flat image information is sent to manage mail image 58 where the various options and the costs associated therewith that the recipient may have for delivering the information contained in the package or flat are determined. Then the mail images and options that the recipient has for receiving the package or flat are sent to images 59, where the information appearing on the face of the package or flat in alphanumeric and graphic form and the options in alphanumeric and graphic form the recipient has for receiving the package or flat are transmitted to receiving device 36 (personal computer, television, facsimile machine, personal data assistant, etc.), which is located at the recipient's business or household 35. The recipient may use device 36 (personal computer, facsimile machine, personal data assistant, etc.) located at the recipient's business or household 35 to inform receive and process recipient options 61, located at data center 34, of the manner in which the package or flat should be delivered. The recipient may also use a touch tone and/or voice telephone 87 to inform options 61 of the manner in which the recipient would like the package or flat displayed on the receiving device 36, i.e., television delivered. For instance, the recipient may want the package or flat physically delivered to the recipients house faster or slower, or the package or flat physically redirected to the recipients temporary address, or physically delivered to the recipients agent, or physically delivered to the recipients attorney, or physically returned to the mailer, or have the post open the package or flat and have the post e-mail or fax the contents of the package or flat to the recipient and/or parties designated by the recipient.

At this juncture, the recipient may inform options 61 via a device 36 of the manner in which the recipient would like the package or flat processed. Options 61 will then inform the recipient via device 36 of the cost to the recipient to deliver the package or flat in the manner selected by the recipient. The recipient may then inform the carrier to deliver the package or flat in the manner selected by the recipient. The recipient's selected manner of package or flat delivery is forwarded to options rerouting controller 62. If the carrier's specified time to deliver the package or flat has not been reached, or the package or flat is at internally routing for physical processing 63, the package or flat will be sent to recipient options 64 and delivered in the manner selected by the recipient in route mail options 65. Then options 65 informs manage mail database 58 to archive the image and also to notify bill sender and pay carriers 66 to bill the recipient and pay the carrier. At this point, the next package or flat image is ready to be processed.

The package or flat may then be delivered to the recipient at mail box 37 at a faster or slower rate than that selected by the sender; held by the courier for a specified amount of time and then delivered to an address specified by the recipient; opened, and the contents of the package or flat faxed to recipient's selected fax numbers; opened, and the contents of the package or flat faxed to recipient's selected fax numbers and, then the package or flat may be delivered to the physical address specified by the recipient; opened, and the contents of the package or flat e-mailed to recipient's selected e-mail addresses; or

opened, and the contents of the package or flat e-mailed to recipient's selected e-mail addresses, and then the package or flat may be delivered to the physical address specified by the recipient. The recipient may also have instructed the post or courier to return the mail to the sender or to destroy the contents of the package or flat or recycle the contents of the package or flat. Options 61 will also send the cost of the recipient's selected manner of delivery to bill recipient 66 so that the carrier may debit the recipient's account or send a bill to the recipient.

Fig. 4 is a drawing of the information that appears on one or more of receiving devices 36. The information may appear on the display of a personal computer, the screen of a television set, or paper 70 printed by a printer or facsimile machine. An image of the face of a letter mail is shown at 71 and 72, and an image of the face of a flat or package is shown at 73. Data associated with letter mail 71 is shown at 74 and data associated with letter mail 72 is shown at 75. Data associated with package or flat 73 is shown at 76. The options that the recipient has for diverting the mail is shown at 77, and the time that the recipient would like delivery is shown at 78. The unique number 110 shown on letter 71 is also shown at 125, and the unique number 112 shown on letter 72 is also shown at 126. The unique number 111 shown on the face of package or flat 73 is also shown at 125.

Fig. 5 is a drawing of major mailer site 90 that is used in the production of mailpieces for trays 82 (shown in Fig. 2). A mainframe computer 91 is located at site 90. Computer 91 performs preprocessing of the mailpiece by controlling the content and composition of the mailpiece as well as the address management, presortation postal requirements and postal process bar code requirements. Computer 91 is coupled to postal address database 92, postal discount rules 93 and tray routes database 94. Computer 91 utilizes database 92, rules 93 and database 94 to instruct content printer 96 to print the material that is required for the mailing, i.e., information appearing on the face of the mailpiece, and material that is going to be inserted into the mailpiece. Inserter and meter 97 inserts the material into the correct mailpiece, seals the mailpiece, applies the correct postage to the mailpiece, places the mailpiece in the proper tray 82 and prepares documentation for the mailpieces in tray 82. Meter 97 may be an electronic meter that affixes an indicia containing a unique number to each mailpiece that is going to be placed in tray 82. An optional printer 130 may affix a unique number to the mailpieces in tray 82 before the mailpieces are placed in tray 82. The unique number printed by optional printer 130 may contain the serial number of printer 130 plus a unit count of the number of unique numbers printed by printer 130.

Computer 91 will cause tray label printer 101 to print a label according to mail traying process 100 for the tray 82 that inserter and meter 97 is filling. Then the trays 82 containing the mailpieces go to tray routing and booking process 102 and shipping process 103. When the trays 82 are in shipping process 103, postal discount acceptance printer 104 will be instructed by computer 91 to print the proper postal documentation for the mailpieces in tray 82. After process 103 places the proper documentation in trays 82, trays 82 are ready to be shipped to delivery bar code sorter/code printer 25 or sequence bar code sorter/code printer 26 (Fig. 2).

The above specification describes a new and improved method that enables a recipient to inform a carrier of the manner in which the recipient would like mail containing a unique number delivered. It is realized that the above description may indicate to those skilled in the art additional ways in which the principles of this invention may be used without departing from the spirit. Therefore, it is intended that this invention be limited only by the scope of the appended claims.

CLAIMS EP 1246134 A1

1. A method that enables a recipient to inform a carrier of the manner in which the recipient would like the mail delivered, said method comprises the steps of:
depositing with the carrier mail containing the recipient's name and physical address and the sender's name and address;
placing a unique number on the mail;
capturing the name, physical address of the recipient and the sender, and the unique number;
translating the name and physical address of the recipient into an e-mail address;
notifying the recipient of the availability of the deposited mail by the unique number assigned to the mail;
notifying the carrier of the manner in which the recipient would like the mail delivered; and
delivering mail to the recipient in the manner specified by the recipient to the carrier.
2. The method claimed in claim 1, wherein the unique number is placed on the mail by a postage meter before the mail is delivered to the carrier.
3. The method claimed in claim 1, wherein the unique number is placed on the mail by a postage meter while the mail is delivered to the carrier.
4. The method claimed in claim 1, wherein the unique number is placed on a carrier label before the mail is delivered to the carrier.
5. The method claimed in claim 1, wherein the unique number is placed on a carrier label while the mail is delivered to the carrier.
6. The method claimed in claim 1, wherein the unique number is preprinted on a carrier label.
7. The method claimed in claim 1, wherein the recipient notifies the carrier to deliver the mail to a specified name and address.
8. The method claimed in claim 1, wherein the recipient notifies the carrier to return the mail to the sender.
9. The method claimed in claim 1, wherein the recipient notifies the carrier to open the mail.
10. The method claimed in claim 9, further including the steps of:
informing the carrier to e-mail the contents of the mailpiece to the recipient; and
mailing by e-mail the contents of the mailpiece to the recipient.
11. The method claimed in claim 9, further including the steps of:
informing the carrier to e-mail the contents of the mailpiece to one or more specified e-mail addresses; and
mailing by e-mail the contents of the mailpiece to the specified e-mail addresses.
12. The method claimed in claim 9, further including the steps of:
informing the carrier to send by facsimile the contents of the mailpiece to the recipient; and
mailing by facsimile the contents of the mailpiece to the recipient.
13. The method claimed in claim 9, further including the steps of:
informing the carrier to facsimile the contents of the mailpiece to one or more specified facsimile numbers; and
sending by facsimile the contents of the mailpiece to the specified facsimile numbers.
14. The method claimed in claim 1, wherein the recipient notifies the carrier to deliver the mail to the recipient at a different address.
15. The method claimed in claim 1, wherein the recipient notifies the carrier to deliver the mail to the recipient by a slower delivery method than that paid for by the sender.
16. The method claimed in claim 1, wherein the recipient notifies the

carrier to deliver the mail to the recipient by a faster delivery method than that paid for by the sender.

17. The method claimed in claim 1, further including the step of: charging the recipient for receiving notification of the availability of the deposited mail.
18. The method claimed in claim 1, further including the step of: charging the recipient for delivering mail to the recipient in the manner specified by the recipient to the carrier.
19. The method claimed in claim 1, further including the step of: charging the recipient for receiving notification of the availability of the deposited mail; and charging the recipient for delivering mail to the recipient in the manner specified by the recipient to the carrier.
20. The method claimed in claim 1, further including the step of: informing the sender of the delivery of the mail.
21. The method claimed in claim 1, wherein the recipient notifies the carrier to hold the mail for a specified period of time.
22. The method claimed in claim 1, wherein the recipient notifies the carrier to destroy the mail.
23. The method claimed in claim 1, wherein the **recipient notifies** the carrier to **recycle** the **material** comprising the□mail□ .
24. The method claimed in claim 1, wherein the recipient is notified via e-mail of the availability of the deposited mail.
25. The method claimed in claim 1, wherein the recipient is notified via telephone of the availability of the deposited mail.
26. The method claimed in claim 1, wherein the recipient is notified via facsimile of the availability of the deposited mail.
27. The method claimed in claim 1, wherein the recipient is notified via television of the availability of the deposited mail.
28. The method claimed in claim 1, wherein the carrier is notified via e-mail of the manner in which the recipient would like the mail delivered.
29. The method claimed in claim 1, wherein the carrier is notified via facsimile of the manner in which the recipient would like the mail delivered.
30. The method claimed in claim 1, wherein the carrier is notified via telephone of the manner in which the recipient would like the mail delivered.
31. The method claimed in claim 1, wherein the recipient notifies a data center who notifies the carrier of the manner in which the recipient would like the mail delivered.

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S RECIPIENT? (S) (NOTIF??? OR INSTRUCT??? OR COMMAND?)  (S) RECYCLE (S)  MAIL
          519878  RECIPIENT?
          454850  NOTIF???
          968518  INSTRUCT???
         1798134  COMMAND?
          111539  RECYCLE
         3605535  MAIL
      S2      14  RECIPIENT? (S) (NOTIF??? OR INSTRUCT??? OR COMMAND?)  (S)
                  RECYCLE (S)  MAIL
?

T S2/KWIC/1-14

  2/KWIC/1     (Item 1 from file: 16)
DIALOG(R)File  16:(c) 2003 The Gale Group. All rts. reserv.

  (USE FORMAT 7 FOR FULLTEXT)
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TEXT:
...comparable to Windows Me -- and no more than $10 higher. The Pro version will probably **command** a price near the Windows 2000 Pro level. Microsoft has some juggling to do here...

...already work include Test Drive 4, Test Drive 6, Might and Magic VIII, Quake II, **Commandos** : Behind Enemy Lines, Math Advantage 2000 High School 1.0, Jedi Knight: Dark Forces II...My Computer and My Network Places on the desktop. The Spartan Beta 1 interface shows **Recycle** Bin, My Documents, and Windows Media Player as the only items on the desktop. (Earlier versions of Whistler showed **Recycle** Bin only.) Frankly, we'd just as soon they leave off Windows Media Player, too...

...find check boxes that add or subtract My Documents, My Network Places, My Computer, and **Recycle** Bin from your desktop.(click image for expanded view)Would you trade desktop icons for...to the fore.In recent demos, Microsoft showed another application of this feature. With e- **mail** programs that open messages as separate windows, you can literally select all 34 of your unread e- **mail** messages and open them all at once. As they open, they'll form up under...toolbar from the Customize Toolbar dialog.) Another example of contextual Web View options: The opened **Recycle** Bin window logically offers "Empty **Recycle** Bin" and "Restore All" buttons in the Web View area. These are excellent changes, and...

...include Slideshow, a new Filmstrip view, publish to the Web, and send pictures via e- **mail** . The Filmstrip view is designed to let you cue and review through video files. Combined...someone to connect to your computer, you send him or her a specially coded e- **mail** invitation. The Help and Support Services menu contains a step-by-step wizard to guide...

...score. For sending faxes, you use the familiar "print to fax" paradigm. You can select **recipients** from your address book or enter a phone number manually. You can even defer transmitting...

...Notifications for transmissions can take the form of a pop-up dialog or an e- **mail** message. You can share the fax machine with other users on your local network just...

...options for incoming faxes as well. You can have the fax sent to an e- **mail** **recipient** through SMTP **mail** , stored in a file on disk, printed, stored directly in your local inbox, or some...other way. If you're an advanced user, you can also send Microsoft an e- **mail** asking to become a regular beta tester. If you're accepted, this is a lot...

...for highly technical people who have more than one PC to work with. The e- **mail** request address for that is betareq@microsoft.com. For more information, check out the independent...

2/KWIC/2 **(Item 2 from file: 16)**
DIALOG(R)File 16:(c) 2003 The Gale Group. All rts. reserv.

(USE FORMAT 7 FOR FULLTEXT)
TEXT:
...comparable to Windows Me -- and no more than $10 higher. The Pro version will probably **command** a price near the Windows 2000 Pro level. Microsoft has some juggling to do here...

...already work include Test Drive 4, Test Drive 6, Might and Magic VIII, Quake II, **Commandos** : Behind Enemy Lines, Math Advantage 2000 High School

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(USE FORMAT 7 FOR FULLTEXT)
TEXT:
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2/KWIC/13 (Item 1 from file: 348)
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...SPECIFICATION At this point the next letter mail image is ready to be processed.
The letter **mail** may then be delivered to the **recipient** at□mail□ box 37 at a faster or slower rate than that selected by the sender; held ...

...for a specified amount of time and then delivered to an address specified by the **recipient** ; opened, and the contents of the letter **mail** faxed to **recipient** 's selected fax numbers; opened, and the contents of the letter **mail** faxed to **recipient** 's selected fax numbers and then the letter **mail** may be delivered to the physical address specified by the **recipient** ; opened, and the contents of the letter **mail** e-mailed to **recipient** 's selected e-□mail□addresses; or opened, and the contents of the letter **mail** e-mailed to **recipient** 's selected e- **mail** addresses, and then the letter **mail** may be delivered to the physical address specified by the **recipient** . The **recipient** may also have **instructed** the post to return the **mail** to the sender, to destroy the **mail** , or to **recycle** the paper in the letter□mail□ . Options 61 will also send the cost of the **recipient** selected manner of delivery to bill **recipient** 66 so that data center 34 may inform the post to debit the **recipients** account or send a bill to the **recipient** .
Fig. 3 is a drawing showing how this invention may be used by a post...

...is ready to be processed.
The package or flat may then be delivered to the **recipient** at **mail** box 37 at a faster or slower rate than that selected by the sender; held ...

...for a specified amount of time and then delivered to an address specified by the **recipient** ; opened, and the contents of the package or flat faxed to **recipient** 's selected fax numbers; opened, and the contents of the package or flat faxed to **recipient** 's selected fax numbers and, then the package or flat may be delivered to the physical address specified by the **recipient** ; opened, and the contents of the

package or flat e-mailed to **recipient** 's selected e- **mail** addresses; or opened, and the contents of the package or flat e-mailed to **recipient** 's selected e- **mail** addresses, and then the package or flat may be delivered to the physical address specified by the **recipient** . The **recipient** may also have **instructed** the post or courier to return the **mail** to the sender or to destroy the contents of the package or flat or **recycle** the contents of the package or flat. Options 61 will also send the cost of the **recipient** 's selected manner of delivery to bill **recipient** 66 so that the carrier may debit the **recipient** 's account or send a bill to the **recipient** .

Fig. 4 is a drawing of the information that appears on one or more of ...

...CLAIMS the carrier to destroy the mail.

23. The method claimed in claim 1, wherein the **recipient** **notifies** the carrier to **recycle** the material comprising the **mail** .
24. The method claimed in claim 1, wherein the recipient is notified via e-mail...

2/KWIC/14 (Item 2 from file: 348)

DIALOG(R)File 348:(c) 2003 European Patent Office. All rts. reserv.

...SPECIFICATION At this point, the next letter mail image is ready to be processed.

The letter **mail** may then be delivered to the **recipient** at□mail□ box 37 at a faster or slower rate than that selected by the sender; held ...

...for a specified amount of time and then delivered to an address specified by the **recipient** ; opened, and the contents of the letter **mail** faxed to **recipient** -selected fax numbers; opened, and the contents of the letter **mail** faxed to **recipient** -selected fax numbers, and then the letter **mail** may be delivered to the physical address specified by the **recipient** ; opened, and the contents of the letter **mail** e-mailed to **recipient** -selected e- **mail** addresses; or opened, and the contents of the letter **mail** e-mailed to **recipient** -selected e-□mail□addresses, and then the letter **mail** may be delivered to the physical address specified by the **recipient** . The **recipient** may also have□instructed□ the post to return the **mail** to the sender, to destroy the **mail** , or to **recycle** the paper in the letter **mail** . Receive and process user options 61 will also send the cost of the **recipient** selected manner of delivery to bill user and pay post/couriers 66 so that data center 34 may inform the post to debit the **recipients** account or send a bill to the **recipient** .

Fig. 3 is a drawing showing how this invention may be used by a post... is ready to be processed.

The package or flat may then be delivered to the **recipient** at **mail** box 37 at a faster or slower rate than that selected by the sender; held ...

...for a specified amount of time and then delivered to an address specified by the **recipient** ; opened, and the contents of the package or flat faxed to **recipient** selected fax numbers; opened and the contents of the package or flat faxed to **recipient** -selected fax numbers, and then the package or flat may be delivered to the physical address specified by the **recipient** ; opened, and the contents of the package or flat e-mailed to **recipient** -selected e- **mail** addresses; or opened, and the contents of the package or flat e-mailed to **recipient** -selected e- **mail** addresses, and then the package or flat may be delivered to the

physical address specified by the **recipient** . The **recipient** may also have **instructed** the post or courier to return the **mail** to the sender or to destroy the contents of the package or flat or **recycle** the contents of the package or flat. Receive and process user options 61 will also send the cost of the **recipient** -selected manner of delivery to bill user and pay carriers 66 so that the carrier may debit the **recipient** 's account or send a bill to the **recipient** .

Fig. 4 is a drawing of the information that appears on one or more of ...

?

T S2/9/6

2/9/6 (Item 6 from file: 16)

DIALOG(R)File 16:Gale Group PROMT(R)
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The Guided Tour of Windows Whistler Beta 1.(The Guided Tour of Windows Whistler Beta 1 - Get a good look at the next major version of Windows -- the first one to finally merge Win9x with NT.)(Software Review)(Evaluation)

WinMag.com, pNA
Nov 16, 2000
Language: English Record Type: Fulltext Abstract
Article Type: Evaluation
Document Type: Magazine/Journal; Trade
Word Count: 7715

ABSTRACT:
Microsoft's next-generation operating system, code-named Whistler, combines features of Windows 2000 and Windows Me. The software will come in a server version and in Professional and Personal client versions for business and home users respectively. Tests of an early beta version reveal that Microsoft has developed many compatibility and user-interface enhancements, but not all are yet implemented. Hardware compatibility improvements are mostly business-oriented; Whistler will support multifunction devices, but not every home peripheral. Microsoft says it has successfully tested Whistler with many popular games. There are substantial changes in the operation of the Start menu, Control Panel and other basic interface tools, not all of which improve usability. A new Dynamic Setup capability is supposed to automatically retrieve new drivers but does not work yet. Microsoft has merged System Restore functionality into Whistler's backup and recovery tools and designed a logon interface that combines Windows 2000-level security with greater ease of use.

TEXT:
November 10, 2000t wasn't so long ago that Microsoft took the wraps off Windows Me, the last upgrade to the supposedly home-oriented "Windows 9x" line. Even before the dust settled, the software giant was gearing up to release the first widespread private beta to the next major version of Windows, code-named "Whistler."If you could go back six or seven years and sit in on a long-term Microsoft Windows strategy meeting, you would learn that Whistler was the end point, the goal Microsoft had been driving toward all along. The gist of that goal? A single code base, one version of Windows -- the NT version -- as the underpinning for both the business and consumer versions of the Windows platform.So, what is Whistler? For the most part, it's a minor upgrade to Windows 2000 and, at the same time, a major upgrade to Windows Me. You see, Microsoft is in the process of taking all the many consumer-oriented features from Windows Me and grafting them onto Windows 2000. Back in 1993 Microsoft first introduced the far more

reliable Windows NT, from which Windows 2000 is derived, but it was never widely adopted by consumers because of cost, steep hardware requirements, and lack of compatibility with older Windows applications.Let us paint you a picture. Win2000 will soon celebrate its first birthday and is selling fairly well. Whistler's system requirements will likely be the same as Win2000's. And the expectation is that most Whistler users will acquire the operating system preinstalled on their next PC. But here's what's really different: Hardware is catching up, and prices for new systems have dropped dramatically over the last few years. By the time it ships, Whistler will be the first version of NT to ship with system requirements below what consumer PCs generally come equipped with. For operating system upgraders, Microsoft plans to distribute a system analyzer that will help people check their PCs in advance to ensure that Whistler will run on them.Microsoft has also committed to addressing software compatibility issues with Whistler, claiming to have already certified an additional 300 mostly consumer applications for Whistler that wouldn't run under Win2000. It might be time to start believing Microsoft's claims about future versions of Windows again, too, because Microsoft no longer needs two development teams: Windows Me and Windows 2000. In fact, some key Microsoft people have already moved from the Windows Me side of the house to Whistler. The hope is that they can get a lot more done by focusing on a single operating system.Charting WhistlerThe main purpose of this story is to help you get an early bead on Whistler, Microsoft's next major operating system. The Beta 1 version we tested for this story is by no means feature-complete. And much of what's new isn't in this beta or isn't fully operational. That's why Winmag.com is emphasizing what it looks like, what it's supposed to do, and what new features are in process. This is not an evaluative test of the next version of Windows. You can expect us to come back with treatments of Beta 2, Beta 3, and the final version of the product, at the very least. Keep that in mind as you review the pages that follow, which cover what is Whistler?, compatibility, user interface changes, PC health features, Windows logon, new functions and utilities, and our conclusion. What Is Whistler? The short form is: Windows 2000 + Windows Me = Windows Whistler. That's right, the core Win2K operating system kernel and internals remain the same. Marry that with the Millennium Edition PC health features (System File Protection, System Restore, Auto Update) and the digital media features (Windows Movie Maker, Windows Media Player, My Pictures folder, and scanning improvements). Throw in Internet Explorer 6.0 and a very long list of small networking, setup, and support functions and improvements. That's the gist of what Whistler is. When you get right down to it, Whistler is more like Win2K than ME, though. Many of the underlying structures, such as networking, file system, security, and a lot more, are all based on Windows 2000. (For more on Windows Me, see Windows Me: Final Verdict and for more on Win2000, see Say Hello to Windows 2000.) (click image for expanded view) Although still derivative of the Windows 9x and 2000 interfaces, Whistler makes some course corrections that minimize the use of the desktop and maximize the use of the Start menu. Whistler will probably be called Windows 2001 or Windows 2002. More than likely this isn't a distinction that'll be determined as much by when it ships as by marketing issues. Make no mistake: this release of Windows is focused on the client, or desktop, versions. (There will also be server releases, but they may be released later.) Two client versions will be released: the Windows 200x Professional and the Windows 200x Personal/Home/Consumer (take your pick). According to Microsoft, final naming hasn't been determined. Whatever the names are, the Pro version will be a superset of the Personal version. So, the Personal version will have everything you find in Windows Me today plus the current level of networking and security found in Windows 2000. But some business-oriented features will be reserved to the Professional and Server versions. For starters, they will be compiled and released for the Intel Itanium 64-bit processor architecture. Personal will

be available only for the 32-bit Intel chipset. Professional installations can also be administered directly from a domain controller (through features such as IntelliMirror); Personal doesn't support domain-centric admin, or Active Directory features. Professional can be secured to C2 security specs; Personal can't. When? Officially, Microsoft is saying Whistler will ship in the "the second half of 2001." A few weeks earlier, however, we also heard it would ship "by Holiday 2001." More than anything, Microsoft needs this version of Windows to succeed with consumers, since it is replacing an existing and popular line with this new NT-based version. To succeed with home users, Whistler will have to be readily available to PC companies and their customers throughout the holiday buying season. For that reason, we believe Microsoft intends to ship Whistler by late September or early October of 2001. It takes about six weeks for the channel to tune up to a new version of Windows, and the buying season starts after Thanksgiving. You do the math. It's too early to make discerning comments about the installation process and issues users may encounter when attempting to upgrade or clean-install Whistler. Microsoft expects most people to acquire the new OS when they buy a new PC. People upgrading from a Windows 2000 machine will have the best experience. People clean-installing to a machine originally intended for NT or 2000 will likely have the fewest difficulties. A Windows Me upgrade will be possible, and presumably a Windows 98 upgrade too. The Whistler setup looks more like a Win9x setup than previous NT/2000 installation procedures. In beta-testing Whistler, we did encounter setup issues. We even came across a machine that just would not take a Whistler Beta 1 installation, even though it met the system requirements. These negative installation experiences are to be expected with an early beta. Right now, they mean nothing. It's also too early to know pricing. But let's go out on a limb: We expect the price of the consumer version of Whistler to be comparable to Windows Me -- and no more than $10 higher. The Pro version will probably **command** a price near the Windows 2000 Pro level. Microsoft has some juggling to do here, though, since corporate America may adopt the consumer version if there's too much of a delta between the two prices. That would be especially true of small office and small business shops where the higher security levels and support for Active Directory and IntelliMirror features just aren't important. Of course, this will probably happen in any case. Software and Hardware CompatibilityIf there's one thing Microsoft absolutely has to accomplish to transform Windows 2000 into a consumer-oriented operating system, it's compatibility. Both the software home users run and the hardware they run it on has to work with Whistler, or all bets are off. Truth be told, we think Microsoft is to an extent giving up on the hardware issue. They're adding support for multifunction devices -- the ones that print, fax, and make copies, for example. That's key support Whistler has to have. This isn't all about home users either. The vast majority of small businesses, under 50 employees, say, and especially the small office companies (perhaps under 15 employees) are using a Win9x version of Windows. A lot of those same business people buy their PCs in consumer electronics stores. So there's an important crossover between "consumer" and business.(click image for expanded view)To work with older applications, Whistler includes an "emulation mode" that runs programs as if Win95 or NT were running them.The problem is, NT-based Win2000 and 9x-based Windows Me really aren't the same thing, even though they share the name Windows. They don't like the same hardware, especially video cards, sound cards, modems, and any cutting-edge hardware. Microsoft isn't going to be able to make Whistler install properly on every PC already out there. It's just not possible, and it's not Microsoft's fault. It's just the way it is.But one thing Microsoft can, and must, do is make existing consumer (and other Win9x) software run properly under Whistler. That wasn't the case under Windows 2000. Even some of Microsoft's own applications (including Internet Explorer and Windows Media Player) had

trouble with Win2000 at first. During a recent visit to Redmond to be briefed on Whistler, Winmag.com opened the meeting by stating that if Whistler didn't raise the bar on software compatibility, it wouldn't be successful as a consumer OS. In response, we got the sort of smiles all around that lead you to say to yourself, "Man! I guess I just played right into their hand."You see, Microsoft has already certified more than 300 applications for Whistler that aren't certified under Win2K. And most of them are entertainment or education applications. Some of the programs Microsoft says already work include Test Drive 4, Test Drive 6, Might and Magic VIII, Quake II, **Commandos** : Behind Enemy Lines, Math Advantage 2000 High School 1.0, Jedi Knight: Dark Forces II, Learn to Speak English 7.0, NASCAR Racing3, Madden 2001, Need for Speed III: Hot Pursuit, Star Wars: X-Wing Alliance, Triple Play 2001, Indiana Jones and the Infernal Machine, Quake III, Test Drive 5, Madden 2000, Tomb Raider 3, MechWarrior 3, Fisher Price Rescue Heroes: Hurricane Havoc, Dr. Seuss's ABC, and Blue's Treasure Hunt.Another way Whistler enhances application compatibility is via an emulation, called Compatibility Mode, which can run an application as if it were being run with Windows 95 or Windows NT 4.0 with Service Pack 5. It's a standard part of Whistler and easy to set up. This feature is particularly helpful with apps that check for a specific Windows version before they'll run. Often such an application would run if it were just aware of a newer Windows version.The Updated User InterfaceWindows Whistler sports a significant update of the Windows interface. Even in Beta 1, where the final look and feel probably aren't even close to being in evidence, you can see some surprising departures. Taken together, the user interface (UI) updates will change the way we work with Windows on a daily basis. Looked at separately, each change is minor, but there are quite a few of them.The most obvious changes focus on the desktop and the Start Menu. To begin with, say good-bye to My Computer and My Network Places on the desktop. The Spartan Beta 1 interface shows **Recycle** Bin, My Documents, and Windows Media Player as the only items on the desktop. (Earlier versions of Whistler showed **Recycle** Bin only.) Frankly, we'd just as soon they leave off Windows Media Player, too. Like many of the UI changes in Whistler, it's possible to resurrect the missing desktop icons by right-clicking the desktop background and choosing Desktop > Desktop Items. On that new dialog (a remake of the old "Effects" dialog under Windows 98), you'll find check boxes that add or subtract My Documents, My Network Places, My Computer, and **Recycle** Bin from your desktop.(click image for expanded view)Would you trade desktop icons for increased functionality on Start? Microsoft did.But why has Microsoft chosen to greatly simplify the default desktop? With good reason, we think. As soon as you open an app or two, the desktop is usually covered over. If the desktop is your primary interface for working with Windows, you probably find yourself frustrated as a result. In fact, having access to local and network drives and folders on your desktop while your applications are located on the Start Menu has always been a sort of odd duality. Start and End with StartNo matter how many programs you have open on your desktop, the Start button and its menu are always available. That's one of the beauties of the Taskbar, in fact. Start isn't just the first place to go to find something, it's often the quickest way to find anything on your computer, from controls to data to applications. So, what if the primary way to reach My Computer and My Network Places were on the Start Menu instead of the desktop? That thought reveals the theory behind a lot of Microsoft's UI changes for Whistler. If you can get people to click the Start button, and it finally is the primary source for accessing everything on a Windows PC, that's an elegant UI -- no matter how basic and mundane the Start Menu is. Once properly configured, the new Whistler Start Menu lets you access My Documents, My Pictures, My Music, My Computer, My Network Places, and the Control Panel, among other things. Conceptually, it's one-stop shopping, and that's as it should be.Start Menu Nitty-GrittyThe concept behind the new Start Menu may be

first rate, but all is not perfect with the Beta 1. First, it's HTML based, which isn't necessarily bad or good, but change of code changes the way Start works. We'll return to that in a moment.The first thing you notice about the new Start Menu is that it's wider and consists of two columns -- a white column on the left that displays large, easy-to-click program icons (which can be configured as small icons), and a smaller blue area on the right that offers hyperlink-like text selections. Microsoft has bunched the more important functions, such as access to your data, local computer, network volumes, Control Panel, Help, Search, and Run in the smaller blue area where you have to be more precise with your mouse pointer on the target area. The bottom part of the white area on the left is a Most Recently Used (MRU) space that displays the programs you launched recently. The top part is configurable, just as it is in previous versions of Windows. At the bottom of the white area you'll see the "More Programs" item, which leads to the old Programs submenu, which in Beta 1 is the only part of the Start Menu that isn't HTML based.So, what's not to like? Nothing cascades off this new Start Menu to show a new submenu. You have to click everything. Doing so closes the Start Menu and opens that container object. Even "More Programs," which has the right-facing triangle that would seem to indicate that it'll cascade, does not. Control Panel doesn't cascade; My Computer doesn't cascade; My Network Places doesn't cascade. If Microsoft ships this version of Start, you'll have to do a lot more clicking than you should.(click image for expanded view)The good, the bad, and the ugly about Windows Whistler's new Start Menu. There are definitely pros and cons.Even more annoying, My Computer and My Network Places don't even appear by default on the Start Menu (although it's easy to change that). Plus, where's Windows Explorer? How do you open a drive or a folder? Think of how many folder windows you open all the time. Not every file you manipulate is in My Documents. It appears that Microsoft is falling back into that bad habit of protecting us from ourselves. Think of the havoc we'll wreak on our PCs if we actually open program folders!Back to the white space on the left of the Start Menu: We don't happen to think that using a major portion of your UI real estate on a space that displays most recently used program icons works very well. It forces you to stop and check for something that might or might not be there, then having to tunnel down into "More Programs" to find what you need. You can't trust muscle memory to find something for a quick launch. After a while, it may become useless space. A better solution, or at least an option, might be to put the More Programs folders right in the white area. Fewer clicks, quicker access, less chance we'll forget where to find a program.So, while we agree with the concept that the Start Menu should be the primary focal point, the execution in Beta 1 isn't optimized for the way real people use Windows. Microsoft claims it's more important to bring new users along. But how long do people stay new users? How long before they're just as frustrated as we are? It's possible to go back to the old Start Menu, by the way. We knew you'd want to know about that. But doing so totally defeats any user interface advance in Whistler. You'll wind up reinstituting your desktop icons too. Microsoft: Why can't you build a UI solution that works for both novices and experienced users?Control Panel and Taskbar ChangesIf the new Start Menu isn't well implemented, the Control Panel is downright frustrating. Not only is there no more cascading Control Panel submenu (a hard-won, power-user setting in Windows Me and Win2000), but Control Panel has a new Category page that becomes an extra step in reaching the individual applets. At first this made sense to us, but the more we used it, the more annoying it became. Thankfully, this too can be disabled. We're not sure Microsoft has accurately gauged the level of frustration among moderate to experienced users when it adds two extra clicks between those users and the Control Panel applet they want to open. And that's assuming you know which Category door something is hiding behind. Even worse, though, is that we're not sure the Control Panel categories work in

all cases. Some will help new users find things, but others may be more confusing than they're worth. By the way, as long as you have Web View turned on, click the "Switch to Classic Control Panel view" link on the Category page to revert back to the old way of displaying Control Panel.(click image for expanded view)The new Control Panel Category page seems to be a great idea, but you can spend a lot of time clicking through it to find one thing you know is there, but aren't sure where.On a positive note, Microsoft has smartly combined and reorganized the functions of some Control Panels. It's a new mixture that combines the Win2000 Control Panel with the Windows Me panel. Control Panels have been added for newer functions such as Speech, User Accounts, Credential Manager, Wireless Link, and others. This facelift of the Control Panels makes a lot of sense.Taskbar Notification ChangesThe Taskbar Notification area is the indented area of the Taskbar to the left of the clock more commonly known as the System Tray. Programs and services that launch automatically when Windows starts may register small icons and bits of UI on the Tray as an aid to people using the system. Sometimes, though, the icons that display there have little purpose and are almost like miniature advertisements. Or their functions and uses are rarely if ever put to work. Whistler offers a small new feature that automatically hides Tray icons that aren't actively notifying you of something or that you haven't clicked recently. It will make a Tray icon visible automatically if it becomes active. And you can turn this feature off. Your net gain is more Taskbar real estate for showing launched programs, plus reduced clutter.(click image for expanded view)New Notifications control dialog lets you choose whether a notification icon appears in the Taskbar's System Tray.Taskbar Grouping FeatureNow here's a smart idea: Whenever you open a program in Windows, a program tab appears on the Taskbar. You can use these program tabs to switch between programs, and it helps you know how many windows you have open. Before Whistler, the program tabs appeared from left to right on the Taskbar in the order you opened them. The new Taskbar grouping feature in Whistler groups the icons on the Taskbar according to application type. So if you've got five IE windows open, two WordPerfect instances, and three Notepads, they'll be grouped next to each other. There's more, though. As you open additional applications, the Taskbar buttons shrink. Instead of shrinking to near-nonexistence as they do in previous versions of Windows, Whistler automatically combines a group of the same program's icons into a single icon. When you click that program tab you get a pop-up menu showing all the instances of the program, which you can click in turn to bring to the fore.In recent demos, Microsoft showed another application of this feature. With e- **mail** programs that open messages as separate windows, you can literally select all 34 of your unread e- **mail** messages and open them all at once. As they open, they'll form up under a single Taskbar icon, and when you click to display the windows, you'll see each entry displayed by its subject. We suspect programmers of other applications will learn to take advantage of this grouping feature, too. My Computer and Folders Because pictures speak louder than words, we'd like to direct your attention to the new and different version of My Computer, whose image appears very close at hand. (You'll probably have to click the picture to see a bigger version that will give you a real feel for this.) My Computer looks very different. But with the exception of some of the selections on the left side of the My Computer window, the changes you see in the picture are not specific to My Computer. In fact, they show changes that can optionally apply to all folder windows in Whistler. Microsoft says its more robust NTFS file system makes it possible for Whistler to add new object views and sorts, and to update them dynamically as you open new windows or make changes. The new View setting you see, with those larger icons, is called Tile view. It's added to the others you probably know by heart: Icons (was Large Icons), List, Details, and Thumbnails. As part of this change, Microsoft appears to have dropped the Small Icons view. We don't

have a problem with that; Small Icons was a pretty useless view, which was outclassed by the very similar List view. Think of Tile view as Really Large Icons. That's all it is. It's the new "Arrange Icons by" option, "Show in Groups," that adds the other half of the new look. This option helps you understand the icons by categorizing them under subheaders, such as Local Drives, Other, Files, and so on. This feature is aimed primarily at new users, but it's still easier on the eye. We wish it were easier on screen real estate, though. Trying to do two-window operations is a lot harder with both Tile and Show in Groups turned on. By the way, it's possible to make both My Computer and folder windows in general look virtually the same as they did in Windows Me/2000, or even in Win98. (click image for expanded view) The new My Computer is probably a bit easier to use, but it takes up a ton of screen real estate with all the bells and whistles. By now you've probably seen some version of what Microsoft calls Web View, the general name for the descriptive text, data, hyperlinks, and sometimes detail pictures and image previews that appear in context on the left side of folder windows. For Whistler, Microsoft has extended Web View functionality by adding collapsible click functions and many new settings changes. Of course, what you see depends on what folder you open. My Documents has many of the same functions as My Computer, but it adds some things, such as "Make a New Folder Here" and "Copy This Folder." (By the way, we wish Microsoft would break down and add a Make Folder toolbar button that could be optionally applied to every folder toolbar from the Customize Toolbar dialog.) Another example of contextual Web View options: The opened **Recycle** Bin window logically offers "Empty **Recycle** Bin" and "Restore All" buttons in the Web View area. These are excellent changes, and we hope Microsoft continues to add this sort of functionality. The other half of that point, though, is that Web View, like Tile view and the Show in Groups sort, uses a lot of screen real estate. For new users, though, it's a logical trade-off. For the rest of us, while it's no longer possible to turn off Web View on a folder-by-folder basis, we can turn it off globally. My Pictures Microsoft has lavished significant attention on the My Pictures folder, which appeared in basic form in both Windows Me and Win2000. The basic goal of My Pictures is to serve users who are working with digital images, including images you scan or import from digital cameras. My Pictures serves as a bridge between Windows Image Architecture (WIA) one-touch scanners and cameras, and it also plugs into other digital media software, such as Windows Movie Maker and Windows Media Player. Some of the new features, which are mostly available as clickable options from the left-hand Web View area, include Slideshow, a new Filmstrip view, publish to the Web, and send pictures via e- **mail** . The Filmstrip view is designed to let you cue and review through video files. Combined, these new features take My Pictures to another level. There's only one catch. You really have to have Web View turned on to take advantage of the new My Pictures. Since many advanced users are likely to turn Web View off, it would be nice, Microsoft, if we could turn it back on selectively on just a few more-advanced folders, such as this one. Another welcome set of user-interface changes Microsoft is working on consists of improvements to the Folder Options > File Types (or File Associations) dialogs. This has long been a frustrating area, even for advanced users, so even modest changes are welcome. Beyond 'PC Health'Freshness can be a problem for operating systems. Whistler addresses this issue up front during installation with the Dynamic Update (also called Dynamic Setup) feature. As long as your Internet connection is live during the early part of the setup process, Whistler can look for the latest drivers for the hardware you have installed on your system. During our testing, we selected the Dynamic Setup feature, but it didn't appear that any new drivers were fetched from Microsoft. That's not surprising, given this is a very early beta, but the long-term usefulness of this feature will hinge on whether Microsoft can keep the fresh drivers coming after Whistler ships.The

AutoUpdate feature from Windows Me is back in Whistler, and the interface is essentially unchanged. An annoying loop in Whistler Beta 1 first offers to install three updates, and then offers to uninstall them all. It was probably intended this way just as a straw test of the feature, but if you didn't actually look at the details of the updates, you could spend a lot of time installing and uninstalling the same three do-nothing updates.(click image for expanded view)Microsoft claims multiple-user support for AutoUpdate in Whistler, but it's hard to test without any real updates on tap.During the beta testing of Windows Me, we lamented the lack of a detailed log of updates that had been performed. There still doesn't seem to be such a log in Whistler, which is puzzling because it would be a cinch to put this information in the system- event log.Device Driver RollbackWhen the operating system goes crazy, Whistler offers a variety of appropriately sized hammers to apply corrective force. If the problem is with a single device, there's a smart new Device Driver Rollback feature. This comes in handy when you've just updated a device driver and it starts to misbehave or won't work at all. Access to this feature is in Device Manager, properties, for the specific device. Of course, this feature will be useful only if previous drivers were in use. A new installation won't be helped by this feature. In that event, your chief support would be a Windows troubleshooter. In Beta 1, we see no sign that Microsoft has dramatically improved the troubleshooters. As we've commented in the past, the Windows troubleshooters are next to useless. For experienced users, they're completely useless.Beyond 'PC Health' (cont.)To protect the operating system's core files, Windows Me and Windows 2000 employ slight variations on the same theme. Windows Whistler inherits Windows 2000's Windows File Protection. In a nutshell: If an application tries to modify a protected file, Whistler will put back the officially blessed and unmodified version and make a note of the transgression in an event log.Whistler also inherits a feature concept from Windows Me that Microsoft calls System Restore, but this new version differs from its namesake in Windows Me. Microsoft has merged the System Restore functionality into the Backup and Recovery Tools. This group of utilities lets you do standard file backup and restore, but it has taken over the job of saving the crucial operating system files as well. While it makes logical sense to merge the two functions of data backup and system backup, the reality is that the mixture is confusing. Since people don't do a great job of remembering to back up data as it is, this confusion could be reinforcing a negative.(click image for expanded view)Whistler's new System Restore features are tucked in with the data backup and recovery features. Sounds logical, but is it really?If you want to back up or restore files immediately, a wizard leads you through the process of selecting the files and destinations. It's pretty straightforward to use. There's a bit of mystery, however, about what the System State is that's described in the backup utility. Most likely it's the registry and a few other crucial files, but there's no documentation in the beta about what's been backed up. To be really useful, though, any backup process needs to eliminate the human element and be as automatic as possible. Whistler doesn't take the automation far enough in this beta. Without much help, users are expected to create a backup discipline that will protect their data. There's a calendar-style scheduling tool, but no real help on selecting a schedule that will reasonably protect data. If the OS were to ship without any changes here, users would have less protection out of the box than they do in Windows Me. Windows Logon ChangesMicrosoft recognized that the Windows 2000 logon would be difficult for many nonbusiness users of Whistler. Meanwhile, the Windows 9x/Me logon features have always been fatally flawed from a security perspective: All anyone has to do under Win9x is press the Cancel button to log on. So the programmers quite rightly set out to improve the Win2000 logon user experience. If you're experienced with Win2000 or NT and not working in a setting where multiple people share your

PC, you'll probably want to disable the whizzy new "Welcome Screen" that replaces the Win2000 logon dialog. That's easy to do, too.(click image for expanded view)Whistler's new User Accounts wizard makes configuring users much easier than the old NT/2000 tools did.But if you're sharing a PC in either a home or a work environment, the new Welcome Screen makes it easier to configure and mandate user logons for multiple people. The accounts are easily created from the streamlined new wizard-like User Accounts Control Panel. What's more, the separate accounts are profiles that separate each user's data, Windows settings, and many other options. By default, the accounts are not password protected, but that's a condition that can be changed by individual users or an administrator, if desired.So far, so good. We noticed one side effect of this method. In certain network settings (we first noticed this in a large multiple-Windows-version, peer-networking environment), we found that, for PCs to recognize each other on the network, we faced two unsavory choices. Either we had to enable the Guest user type (it's disabled by default), which sets up a clear potential for security breach, or we had to create User Accounts for each of the network workstations. Without doing one or the other, no networking. When you choose the latter option, the negative effect is that every time you start the Whistler PC, you're confronted with the list of all the other workstations on your network as possible logon names for your computer. They aren't local users, though. They're network users. Two different things.Under Windows NT and 2000 all the same issues apply, but with one difference. When you add the names of your network nodes in Local Users and Groups, they don't automatically appear as User logon options at Windows startup. On larger networks, this is really annoying.(click image for expanded view)You can now switch between users on the fly, instead of logging out and logging back in again.As you may have guessed, a solution exists. Network workstations that connect to other PCs should probably be assigned to the Network group, not to the Users or Guests groups. That signifies they connect only to the PC via network and aren't actually local users. But we know of few small networks that are actually set up this way. Also, we had trouble creating this special Network group in Beta 1. Another solution is to add the workstation names but just apply no groups to them. We're trying to get clarification from Microsoft on this point.Fast User SwitchingLogging off and logging back on again can be tedious and time-consuming, especially if you have a lot of programs in your Startup group. However, not all functions are going to be available to all users, so sometimes logging off and logging on again as another user is mitigated. To offset this, Whistler introduces the ability to simply switch users in midprocess rather than log off entirely. By selecting Log Off and then Switch User, users are brought to the user-selection screen. From there, they can choose another user to continue with and pick up right where they left off.Users and Networking(click image for expanded view)Windows Keyring stores credentials for all the domains you traverse in a day's work.Users who sign on securely to multiple domains, or who use X.509 certificates to authenticate themselves in different environments, will be heartened to know that Whistler has a centralized repository for all secured credentials. Take a look at the Credential Management icon in the Control Panel -- also known as the "Windows Keyring" in this beta -- lets you assign specific usernames and passwords to be used automatically whenever the user signs on to a given domain. This eliminates having to tediously retype passwords for each network that gets traversed. In fact, the goal is to supply a consistent, simple sign-on experience for people, including those who roam.So what does that mean, and how would this really work? Here's a Microsoft-supplied example: When you attempt to access a needed business application within your company's network, the first attempt to open the program would require authentication, and you would be prompted to supply a credential. Thereafter, Whistler will automatically associate the credential with the application.(click image for expanded view)Network

Bridging lets you connect disparate network types, such as Ethernet and wireless networks.Network BridgingFor bridging different types of network media, Whistler provides a helpful new Network Bridging feature. If you've got more than one type of network media installed in a given computer -- such as Ethernet and wireless media -- Network Bridging lets you span both of them seamlessly. There's also an algorithm that prevents spanned networks from creating infinite loops.Personal FirewallAnother adjunct to the connection-sharing tools within Whistler is the Personal Firewall, which secures the connection by protocol/port or by application. The service isn't available locally -- it's available only to people who share your Internet connection -- so it doesn't really replace the functionality of products such as ZoneAlarm or BlackIce Defender. It's designed instead to function more as a simple proxy server for shared Internet connections.Additional New FeaturesRemote Desktop ConnectionAlso referred to as "Remote Assistance," Remote Desktop Connection is a repackaged version of Terminal Services. The difference is in how it's used. Remote Desktop Connection not only allows you to connect to your own computer remotely and administer it as if you were locally logged on -- it also allows you to invite someone else to do the same.(click image for expanded view)Remote Control invitations are timed to expire shortly after they're sent.The key word is "invite," because people can't just barge in. If you want someone to connect to your computer, you send him or her a specially coded e- **mail** invitation. The Help and Support Services menu contains a step-by-step wizard to guide people through that process. The invitation is timed to expire and is keyed, so it can't be abused, and connections can also be password protected for higher security. The other person must also be using Whistler (or a later revision of same), because of security precautions.Remote Desktop Connection has some real conceptual problems at this stage. For one, it does not work across a firewall (at least if both parties are firewalled). What's more, the connection is keyed to a specific IP address. If you use a dial-up connection with a dynamic IP address and you get kicked off after you send the invitation, you'll have to resend after you dial back in, since your IP will have changed.(click image for expanded view)Back at last, after a hiatus, an up-to-date, though basic, fax console is re-instituted in the next version of Windows.The Return of FaxDuring the transition from the old Microsoft Exchange client and Outlook Express, Microsoft fumbled the ball on fax support. With Whistler, it scooped up the fumble on a flat-out run and could very well score. For sending faxes, you use the familiar "print to fax" paradigm. You can select **recipients** from your address book or enter a phone number manually. You can even defer transmitting until a later time to take advantage of lower phone rates. Notifications for transmissions can take the form of a pop-up dialog or an e- **mail** message. You can share the fax machine with other users on your local network just as you share a printer.There are plenty of options for incoming faxes as well. You can have the fax sent to an e- **mail** **recipient** through SMTP **mail** , stored in a file on disk, printed, stored directly in your local inbox, or some combination of all of the above. It's a very flexible fax package with more than enough functionality for most home users and small businesses.Migration WizardMoving your applications and settings from one PC to another is always a headache. The solutions range from the grueling -- tediously reinstalling everything on the new computer and copying files and settings by hand, to the overblown -- physically moving the hard drive from one computer to another. Whistler's Migration Wizard, a new feature for all breeds of Windows seen for the first time here, collects files and settings from one Migration Wizard-enabled computer and transports them to another. One apparent downside of the Wizard is, of course, that you can't migrate from a system that doesn't already have it. Whether or not it'll be possible to use the Wizard on a non-Whistler system isn't known at this time.RecommendationsIt's way too early for Winmag.com to make a judgment

call on Whistler. We can say that there are quite a few interesting things Microsoft is working on. If everything turns out as it should, Whistler could be a major bargain for home, small office, and small business users in particular. It could be the operating system that finally gets real about being both the most popular version of Windows and the most reliable. That's a combination we've awaited for some time.(click image for expanded view)If you're an experienced Win9x user, and someone who puts hands on all the control surfaces -- even the lesser-known ones -- you'll find yourself climbing a steeper learning curve than you have with other Win9x upgrades. Like Win2000 and NT, Whistler locates things in different places, and there are whole pieces of it that don't have counterparts under Win9x, such as the Administration Tools, Security features, Users Accounts, and especially the UI for networking and Internet-oriented functions. Expect to go back to school on some of these things, because Microsoft seems unwilling to make Consumer Whistler that much like Windows 9x.Hardware could also be an issue, because Whistler is unlikely to support all existing PCs; even ones that meet the system requirements may just never run this new OS properly.But over time, the increased reliability, better memory usage, and all-around stability that this new NT-derived version of Windows is sure to deliver is worth the short-term pain. Now if we could just get Microsoft to rethink some of those pesky user-interface issues.As we wrote up top, you can expect to see Whistler preinstalled on consumer (and business) PCs sold in time for the 2001 holiday season. Between now and then, Winmag.com expects at least two, and possibly three Whistler betas. Beta 2 is expected during the first quarter of 2001, and if it follows the usual course, expect Beta 3 in the second quarter. Thereafter, there will be several distributed Release Candidates.For those of you who want to get in on the beta process, we have two thoughts. The first is that Microsoft offered a public Beta 3 test of both Windows 95 and Windows 98. The Windows 98 public Beta 3 test was large. You had to pay a small amount for the shipping of the CD, but hundreds of thousands of people participated in that program. No guarantees, but there's a good chance Microsoft will offer a similar late beta program for Whistler, too. There is one other way. If you're an advanced user, you can also send Microsoft an e- **mail** asking to become a regular beta tester. If you're accepted, this is a lot of work, and it's a good idea only for highly technical people who have more than one PC to work with. The e- **mail** request address for that is betareq@microsoft.com. For more information, check out the independent Betatester Web site.Winmag.com will cover all the major Whistler betas to come, as well as the final version when it arrives. We'll also offer the Essential Guide to Installing Windows Whistler, tips, and much more. We're just getting started on what's probably the most important version of Windows since Windows 95.

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PUBLISHER NAME: CMP Media, Inc.
COMPANY NAMES: *Microsoft Corp.
EVENT NAMES: *350 (Product standards, safety, & recalls)
GEOGRAPHIC NAMES: *1USA (United States)
PRODUCT NAMES: *7372502 (Operating Systems)
INDUSTRY NAMES: BUSN (Any type of business); CMPT (Computers and Office Automation)
SIC CODES: 7372 (Prepackaged software)
NAICS CODES: 51121 (Software Publishers)
TICKER SYMBOLS: MSFT
TRADE NAMES: Microsoft Whistler (Operating system)
SPECIAL FEATURES: COMPANY
?

T S2/9/13

2/9/13 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01456260
Messaging services for uniquely identified mail
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PATENT (CC, No, Kind, Date): EP 1246134 A1 021002 (Basic)
APPLICATION (CC, No, Date): EP 2002006682 020326;
PRIORITY (CC, No, Date): US 818800 010327
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G07B-017/00

ABSTRACT EP 1246134 A1
A method that enables the recipient to receive notification of the letters, flats and/or packages (mail) that the recipient is going to receive prior to the delivery of the mail. The recipient is then able to inform a post or courier i.e., Federal Express(R), Airborne(R), United Parcel Service(R), DHL(R), etc., of the manner in which the recipient would like the mail delivered. The post and courier hereinafter will be referred to as "carrier". The invention also allows the carrier to uniquely identify each piece or parcel of mail (even if they are from the same sender to the same recipient on the same day) so that the mail may be more easily identified by the carrier, sender and the recipient. For instance, the recipient may want the mail physically delivered to their house faster or slower, or the mail physically redirected to the recipient's temporary address, or physically delivered to the recipient's agent, or physically delivered to the recipient's attorney, or physically returned to the mailer, or have the carrier open the physical mail and have the carrier e-mail or fax the contents of the mailpiece to the recipient and/or parties designated by the recipient.
ABSTRACT WORD COUNT: 196
NOTE:
Figure number on first page: 2

LEGAL STATUS (Type, Pub Date, Kind, Text):
Application: 021002 A1 Published application with search report
Search Report: 021002 A1 Date of dispatch for correction to the search report: 20020626
Examination: 030528 A1 Date of request for examination: 20030328
LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200240	923
SPEC A	(English)	200240	4471
Total word count - document A			5394
Total word count - document B			0

Total word count - documents A + B 5394

SPECIFICATION EP 1246134 A1

The invention relates generally to the field of mail delivery systems and, more particularly, to systems that may deliver mail by physical and/or electronic means.

People have directly transmitted information from one person to another. Information was first transmitted by spoken word and later by the written word. Writings enabled people to transmit information by messengers from a location in which the sender of the writing was present to another location where the receiver was present. In time, postal services were developed in which a person would deliver letters to the post office in one city, and an agent of the post office would deliver that letter to a post office in another city, where the letter mail would be picked up by the person to whom the letter was sent.

Ever since the numeric codification of streets and buildings received general acceptance, an individual's name and household postal address have been linked. The sender of a letter or package would deliver a letter or package to the post that had the correct recipient postal address, and the post would deliver the letter or package to the numeric street address of the recipient of the letter or package. A correct recipient postal address for the delivery of the letter or package to the recipient included the name of the recipient; the street address of the recipient; the city and state of the recipient; and the zip code of the recipient. Thus, the correct recipient postal address is usually the actual location of the recipient.

Typically, it takes the post three to five days to deliver letters and/or packages to a recipient. Sometimes, recipients of letters and packages like to know what letters and packages they are going to receive before they receive them. For instance, if someone is going on a trip, they may want to receive their bills, i.e., credit card, electric, gas, oil, hospital, doctor, etc., before they leave on the trip so that they may pay the bills before a finance charge for late payment of the bill is applied to their account. Someone may also want to receive a package before they go on a trip so that they may take the contents of the package on the trip. The recipient may also want to delay delivery of a particular letter or package until they return from their trip. The reason for the foregoing may be that the recipient does not want to retrieve the letter or package at the post office or have the letter or package waiting at a vacant house.

This invention overcomes the disadvantages of the prior art by providing a method that enables the recipient to receive notification of the letters, flats and/or packages (mail) that the recipient is going to receive prior to the delivery of the mail. The recipient is then able to inform a post or courier i.e., Federal Express(R), Airborne(R), United Parcel Service(R), DHL(R), etc., of the manner in which the recipient would like the mail delivered. The post and courier hereinafter will be referred to as "carrier". The invention also allows the carrier to uniquely identify each piece or parcel of mail (even if they are from the same sender to the same recipient on the same day) so that the mail may be more easily identified by the carrier, sender and the recipient. For instance, the recipient may want the mail physically delivered to their house faster or slower, or the mail physically redirected to the recipient's temporary address, or physically delivered to the recipient's agent, or physically delivered to the recipient's attorney, or physically returned to the mailer, or have the carrier open the physical mail and have the carrier e-mail or fax the contents of the mailpiece to the recipient and/or parties designated by the recipient.

This invention accomplishes the foregoing by depositing with the carrier mail containing the recipient's name and physical address and the

sender's name and address; placing a unique number on the mail; capturing the name, physical address of the recipient and the sender, and the unique number; translating the name and physical address of the recipient into an e-mail address; notifying the recipient of the availability of the deposited mail by the unique number assigned to the mail; notifying the carrier of the manner in which the recipient would like the mail delivered; and delivering mail to the recipient in the manner specified by the recipient to the carrier.

Fig. 1A is a drawing of a metered mailpiece;

Fig. 1B is a drawing of a permit mailpiece;

Fig. 1C is a drawing of a stamped mailpiece;

Fig. 1D is a drawing of a flat or package that is going to be delivered by a carrier;

Figs. 1A-1D show various methods of evidence for the payment of postage. It will be obvious to one skilled in the art that additional methods of evidence for the payment of postage exist;

Fig. 1E is a drawing of a metered mailpiece, that has been metered with a digital meter that affixes a unique number to the mailpiece;

Fig. 1F is a drawing of a metered mailpiece, that has been metered with a personal computer meter that affixes a unique number to the mailpiece;

Fig. 2 is a drawing showing how this invention may be used by a post in the processing of letter mail;

Fig. 3 is a drawing showing how this invention may be used by the post and/or a courier in the processing of flats and packages;

Fig. 4 is a drawing of the information that appears on one or more of receiving devices 36 and

Fig. 5 is a drawing of major mailer site 90.

Referring now to the drawings in detail and more particularly to Fig. 1A, the reference character 11 represents a mailpiece that has a sender address field 12, a recipient address field 13 and a postal indicia 14. Mailpiece 11 also contains a unique number 110. Unique number 110 may be in the form of numbers, letters or alphanumeric characters. Number 110 may also take the form of a unique bar code or other coded graphic. Number 110 is affixed to mailpiece 11 by the post. The manner in which number 110 is affixed to mailpiece 11 hereinafter will be described in the description of Fig. 2.

Fig. 1B is a drawing of a permit mailpiece. Mailpiece 15 has a sender address field 16, a recipient address field 17 and a permit 18. Mailpiece 15 also contains a unique number 110. Unique number 110 may be in the form of numbers, letters or alphanumeric characters. Number 110 may also take the form of a unique bar code or other coded graphic. Number 110 is affixed to mailpiece 15 by the post. The manner in which number 110 is affixed to mailpiece 15 hereinafter will be described in the description of Fig. 2.

Fig. 1C is a drawing of a stamped mailpiece. Mailpiece 19 has a sender address field 20, a recipient address field 9 and a stamp 10. Mailpiece 19 also contains a unique number 110. Unique number 110 may be in the form of numbers, letters or alphanumeric characters. Number 110 may also take the form of a unique bar code or other coded graphic. Number 110 is affixed to mailpiece 19 by the post. The manner in which number 110 is affixed to mailpiece 19 hereinafter will be described in the description of Fig. 2.

Fig. 1D is a drawing of a flat or package that is going to be delivered by a carrier. Package or flat 40 has a label 39 affixed thereto. Label 39 has a sender address field 41, a recipient address field 42 and may have other sender information, i.e., the sender's phone number 44. Indicia 43 is affixed to label 39. Indicia 43 may be a postal indicia or courier symbology. Package 40 also contains a unique number 111. Unique number 111 may be in the form of numbers, letters or alphanumeric characters.

Number 111 may also take the form of a unique bar code or other coded graphic. Number 111 is affixed to package or flat 40 by printer 121 (Fig. 3) or preprinted on label 39.

Fig. 1E is a drawing of a metered mailpiece that has been metered with a digital meter that affixes a unique number to the mailpiece. Mailpiece 113 has a sender address field 114 and a recipient address field 115. A metered indicia 112 is affixed to mailpiece 113. Indicia 112 contains a unique number 135.

Fig. 1F is a drawing of a metered mailpiece that has been metered with a personal computer meter that affixes a unique number to the mailpiece. Indicia 139 may be a two dimensional bar code 140, that may contain unique number 141.

Fig. 2 is a drawing showing how this invention may be used by a post in the processing of letters. Letter mail that is deposited in trays 6 and delivered to the post is read by reader 23. Collection letter mail may be metered letter mail that is produced at a mailer site 7 or a sender household 8 by a postage meter or a personal computer meter; stamped mail; or permit mail. Collection letter mail is placed in collection mail input 21, i.e., mail boxes or delivered to the United States Postal Service unsorted. Collection letter mail is sent to advanced facer canceller (hereinafter "AFCS") 22. AFCS 22 first faces the letter mail. Then AFCS 22 electronically identifies and separates prebarcoded mail, handwritten addresses and machine-imprinted address pieces for faster processing through automation. A printer 120 or AFCS 22 will print unique number 110 on mailpieces 11, 15 and 19 (Figs 1A, 1B, 1C). Unique number 110 may contain the serial number of printer 120 plus a unit count of the mailpiece printed or the serial number of AFCS 22 plus a unit count of the mailpiece printed. Letter mail that AFCS 22 determines is optical character readable is sent to multi-line optical character reader/code printer (hereinafter "MLOCR") 23. Reader 23 reads the entire address on the letter mail: sprays a bar code on the mail; and then sorts the mail. Letter mail that is able to be scanned and sorted by reader 23 is sent to bar code sorter/code printer 24. Letter mail that the mailer has prebarcoded and contains a facing identification mark is sent to bar code sorter/ code printer (hereinafter "BCS") 24.

Trayed mail 82 (mail in which the sender is entitled to discounts) that is produced at a major mailer site 90 (Fig. 5) is sent to a delivery bar code sorter/code printer (hereinafter "BCS") 25 or a carrier sequence bar code sorter/code printer (hereinafter "CSBCS") 26. Sorters 25 and 26 sort the letter mail in the order that the mail is going to be delivered by postal carrier 27. Letter mail that AFCS 22 determines is not optical character readable is sent to bar code sorter/code printer 28. Letter mail that AFCS 22 obtains electronic images from and letter mail that reader 23 obtains electronic images from transfers the electronic images to remote bar code system (hereinafter RBCS") 32. System 32 matches the look up zip code for the letter mailpieces from AFCS 22 and merges them. System 32 electronically transmits the bar code information to sorter 28 where the bar code information is sprayed on the mailpieces. Letter mail that is able to be scanned and sorted by sorters 24 and 28 is sent to a delivery bar code sorter 25. Sorters 25 and 26 sort the letter mail in the order that the mail is going to be delivered by postal carrier 27, or hold the mail for recipient diversion for a specified period of time in divert mail options rerouting controller 62.

Letter mail that can not be scanned and sorted by sorters 24 and 28 is sent to letter sort machine (hereinafter "LSM") 29. Letter mail that can be sorted by LSM 29 is sent to postal hand casing 30. Postal hand casing 30 is the process in which the postal carrier sorts the letter mail in the order that the letter mail is going to be delivered by postal carrier 27. Letter mail that can not be sorted by LSM 29 is sent to manual process 31. Manual process 31 attempts to classify the previously

rejected mailpiece to: redirect the mailpiece; declare the mailpiece dead; or manually re-code the mailpiece for redelivery. Then the mailpieces that have not been processed in manual lookup and scan sortation process 31 are sent to dead letters 33. In process 31 an operator may determine the address of the recipient and produce a label to be placed on the letter mail. Then the letter mail would go to postal hold casing 30 where the mail is sorted in the order that the mail is going to be delivered by postal carrier 27.

Letter mail that can not be faced and cancelled by AFCS 22 is sent to manual process 31. Manual process 31 attempts to classify the previously rejected letter mailpiece to redirect the mailpiece; declare the mailpiece dead; or manually re-code the mailpiece for redelivery. Then the letter mail that manual process 31 is able to classify is sent to postal carrier casing 30 before it is delivered by postal carrier 27.

RBCS 32 electronically transmits the bar code information that represents the destination of the letter mailpiece and the party to whom the mailpiece is to be delivered and the image of the face of the mailpiece to data center 34. The aforementioned scanners scan all of the information appearing on the face of the letter, i.e., the sender's name and address 12 (Fig. 1A), the recipient's name and address 13 and postal indicia 14. The scanned information is transferred to accept process images 52. Then the information is sent to encode, sort, store 53. At this point, the recipient's physical address is verified by checking postal address database 54, and the recipient's e-mail address is determined from e-mail database 55. Temporary database 56 is then searched to determine whether or not the recipient has left any forwarding addresses. Encode 53 then encodes and sorts the information obtained from databases 54, 55 and 56.

The aforementioned encoded and sorted information is stored in mail image database 57. Then the mail image information is sent to manage mail image 58 where the various options and the costs associated therewith that the recipient may have for delivering the information contained in the letter is determined. Then the mail images and options that the recipient has for receiving the letter is sent to images 59, where the information appearing on the face of the letter in alphanumeric and graphic form and the options in alphanumeric and graphic form the recipient has for receiving the letter are transmitted to receiving device 36 (personal computer, television, facsimile machine, personal data assistant, etc.), which is located at the recipient's business or household 35. The options that the recipient has for diverting the letter are described in the description of Fig. 4.

The recipient may use device 36 (personal computer, facsimile machine, personal data assistant, etc.) located at the recipient's business or household 35 to inform receive and process user options 61, located at data center 34, of the manner in which the letter mail should be delivered. The recipient may also use a touch tone and/or voice telephone 87 to inform options 61 of the manner in which the recipient would like the letter mail displayed on the receiving device 36, i.e., television delivered. For instance, the recipient may want the letter mail physically delivered to the recipient's house faster or slower, or the letter mail physically redirected to the recipients temporary address, or physically delivered to the recipient's agent, or physically delivered to the recipient's attorney, or physically returned to the mailer, or have the post open the letter mail and have the post e-mail or fax the contents of the letter mail to the recipient and/or parties designated by the recipient.

At this juncture, the recipient may inform options 61 via a device 36 of the manner in which the recipient would like the letter mail processed. Options 61 will then inform the recipient via device 36 of the cost to the recipient to process the letter mail in the manner selected

by the recipient. The recipient may then inform the post to deliver the letter mail in the manner selected by the recipient. The recipients selected manner of letter mail processing is forwarded to options rerouting controller 62. If the post specified time to deliver the letter mail has not been reached the letter mail is sent to recipient options 64 and delivered in the manner selected by the recipient in route mail options 65. Then options 65 informs manage mail database 58 to archive the image and also to notify bill sender and pay carriers 66 to bill the recipient and pay the post. At this point the next letter mail image is ready to be processed.

The letter **mail** may then be delivered to the **recipient** at□mail□ box 37 at a faster or slower rate than that selected by the sender; held by the post for a specified amount of time and then delivered to an address specified by the **recipient** ; opened, and the contents of the letter **mail** faxed to **recipient** 's selected fax numbers; opened, and the contents of the letter **mail** faxed to **recipient** 's selected fax numbers and then the letter **mail** may be delivered to the physical address specified by the **recipient** ; opened, and the contents of the letter **mail** e-mailed to **recipient** 's selected e-□mail□addresses; or opened, and the contents of the letter **mail** e-mailed to **recipient** 's selected e- **mail** addresses, and then the letter **mail** may be delivered to the physical address specified by the **recipient** . The **recipient** may also have **instructed** the post to return the **mail** to the sender, to destroy the **mail** , or to **recycle** the paper in the letter□mail□ . Options 61 will also send the cost of the **recipient** selected manner of delivery to bill **recipient** 66 so that data center 34 may inform the post to debit the **recipients** account or send a bill to the **recipient** .

Fig. 3 is a drawing showing how this invention may be used by a post or courier in the processing of packages and flats. Packages and flats are deposited with the carrier at 50. Printer 121 will print unique number 111 on label 39 of the package or flat (Fig. 1D). Unique number 111 may contain the serial number of printer 121 plus a unit count of the number of unique numbers printed by printer 121. Packages and flats are scanned by scanner/coder 51. Scanner/coder 51 scans all of the information appearing on the face of the package or flat, i.e., (from Fig. 1D) the sender's address 41, the sender's phone number 44, the recipient's address 42 and courier symbology 43. The scanned information is coded, formatted and sorted, and the physical flat or package is sent to internal routing for physical delivery of the package or flat 63. The aforementioned information is transferred to accept process images 52, which is located at data center 34. Then the information is sent to encode, sort, store 53. At this point, the recipient's physical address is verified by checking postal address database 54, and the recipient's e-mail address is determined from e-mail database 55. Temporary database 56 is then searched to determine whether or not the recipient has left any forwarding addresses. Encode 53 then encodes and sorts the information obtained from databases 54, 55 and 56.

The aforementioned encoded and sorted information is stored in mail image archive database 57. Then the package or flat image information is sent to manage mail image 58 where the various options and the costs associated therewith that the recipient may have for delivering the information contained in the package or flat are determined. Then the mail images and options that the recipient has for receiving the package or flat are sent to images 59, where the information appearing on the face of the package or flat in alphanumeric and graphic form and the options in alphanumeric and graphic form the recipient has for receiving the package or flat are transmitted to receiving device 36 (personal computer, television, facsimile machine, personal data assistant, etc.), which is located at the recipient's business or household 35. The

recipient may use device 36 (personal computer, facsimile machine, personal data assistant, etc.) located at the recipient's business or household 35 to inform receive and process recipient options 61, located at data center 34, of the manner in which the package or flat should be delivered. The recipient may also use a touch tone and/or voice telephone 87 to inform options 61 of the manner in which the recipient would like the package or flat displayed on the receiving device 36, i.e., television delivered. For instance, the recipient may want the package or flat physically delivered to the recipients house faster or slower, or the package or flat physically redirected to the recipients temporary address, or physically delivered to the recipients agent, or physically delivered to the recipients attorney, or physically returned to the mailer, or have the post open the package or flat and have the post e-mail or fax the contents of the package or flat to the recipient and/or parties designated by the recipient.

At this juncture, the recipient may inform options 61 via a device 36 of the manner in which the recipient would like the package or flat processed. Options 61 will then inform the recipient via device 36 of the cost to the recipient to deliver the package or flat in the manner selected by the recipient. The recipient may then inform the carrier to deliver the package or flat in the manner selected by the recipient. The recipient's selected manner of package or flat delivery is forwarded to options rerouting controller 62. If the carrier's specified time to deliver the package or flat has not been reached, or the package or flat is at internally routing for physical processing 63, the package or flat will be sent to recipient options 64 and delivered in the manner selected by the recipient in route mail options 65. Then options 65 informs manage mail database 58 to archive the image and also to notify bill sender and pay carriers 66 to bill the recipient and pay the carrier. At this point, the next package or flat image is ready to be processed.

The package or flat may then be delivered to the **recipient** at **mail** box 37 at a faster or slower rate than that selected by the sender; held by the courier for a specified amount of time and then delivered to an address specified by the **recipient** ; opened, and the contents of the package or flat faxed to **recipient** 's selected fax numbers; opened, and the contents of the package or flat faxed to **recipient** 's selected fax numbers and, then the package or flat may be delivered to the physical address specified by the **recipient** ; opened, and the contents of the package or flat e-mailed to **recipient** 's selected e- **mail** addresses; or opened, and the contents of the package or flat e-mailed to **recipient** 's selected e- **mail** addresses, and then the package or flat may be delivered to the physical address specified by the **recipient** . The **recipient** may also have **instructed** the post or courier to return the **mail** to the sender or to destroy the contents of the package or flat or **recycle** the contents of the package or flat. Options 61 will also send the cost of the **recipient** 's selected manner of delivery to bill **recipient** 66 so that the carrier may debit the **recipient** 's account or send a bill to the **recipient** .

Fig. 4 is a drawing of the information that appears on one or more of receiving devices 36. The information may appear on the display of a personal computer, the screen of a television set, or paper 70 printed by a printer or facsimile machine. An image of the face of a letter mail is shown at 71 and 72, and an image of the face of a flat or package is shown at 73. Data associated with letter mail 71 is shown at 74 and data associated with letter mail 72 is shown at 75. Data associated with package or flat 73 is shown at 76. The options that the recipient has for diverting the mail is shown at 77, and the time that the recipient would like delivery is shown at 78. The unique number 110 shown on letter 71 is also shown at 125, and the unique number 112 shown on letter 72 is also shown at 126. The unique number 111 shown on the face of package or flat

73 is also shown at 125.

Fig. 5 is a drawing of major mailer site 90 that is used in the production of mailpieces for trays 82 (shown in Fig. 2). A mainframe computer 91 is located at site 90. Computer 91 performs preprocessing of the mailpiece by controlling the content and composition of the mailpiece as well as the address management, presortation postal requirements and postal process bar code requirements. Computer 91 is coupled to postal address database 92, postal discount rules 93 and tray routes database 94. Computer 91 utilizes database 92, rules 93 and database 94 to instruct content printer 96 to print the material that is required for the mailing, i.e., information appearing on the face of the mailpiece, and material that is going to be inserted into the mailpiece. Inserter and meter 97 inserts the material into the correct mailpiece, seals the mailpiece, applies the correct postage to the mailpiece, places the mailpiece in the proper tray 82 and prepares documentation for the mailpieces in tray 82. Meter 97 may be an electronic meter that affixes an indicia containing a unique number to each mailpiece that is going to be placed in tray 82. An optional printer 130 may affix a unique number to the mailpieces in tray 82 before the mailpieces are placed in tray 82. The unique number printed by optional printer 130 may contain the serial number of printer 130 plus a unit count of the number of unique numbers printed by printer 130.

Computer 91 will cause tray label printer 101 to print a label according to mail traying process 100 for the tray 82 that inserter and meter 97 is filling. Then the trays 82 containing the mailpieces go to tray routing and booking process 102 and shipping process 103. When the trays 82 are in shipping process 103, postal discount acceptance printer 104 will be instructed by computer 91 to print the proper postal documentation for the mailpieces in tray 82. After process 103 places the proper documentation in trays 82, trays 82 are ready to be shipped to delivery bar code sorter/code printer 25 or sequence bar code sorter/code printer 26 (Fig. 2).

The above specification describes a new and improved method that enables a recipient to inform a carrier of the manner in which the recipient would like mail containing a unique number delivered. It is realized that the above description may indicate to those skilled in the art additional ways in which the principles of this invention may be used without departing from the spirit. Therefore, it is intended that this invention be limited only by the scope of the appended claims.

CLAIMS EP 1246134 A1

1. A method that enables a recipient to inform a carrier of the manner in which the recipient would like the mail delivered, said method comprises the steps of:

depositing with the carrier mail containing the recipient's name and physical address and the sender's name and address;

placing a unique number on the mail;

capturing the name, physical address of the recipient and the sender, and the unique number;

translating the name and physical address of the recipient into an e-mail address;

notifying the recipient of the availability of the deposited mail by the unique number assigned to the mail;

notifying the carrier of the manner in which the recipient would like the mail delivered; and

delivering mail to the recipient in the manner specified by the recipient to the carrier.

2. The method claimed in claim 1, wherein the unique number is placed on the mail by a postage meter before the mail is delivered to the carrier.

3. The method claimed in claim 1, wherein the unique number is placed on the mail by a postage meter while the mail is delivered to the carrier.
4. The method claimed in claim 1, wherein the unique number is placed on a carrier label before the mail is delivered to the carrier.
5. The method claimed in claim 1, wherein the unique number is placed on a carrier label while the mail is delivered to the carrier.
6. The method claimed in claim 1, wherein the unique number is preprinted on a carrier label.
7. The method claimed in claim 1, wherein the recipient notifies the carrier to deliver the mail to a specified name and address.
8. The method claimed in claim 1, wherein the recipient notifies the carrier to return the mail to the sender.
9. The method claimed in claim 1, wherein the recipient notifies the carrier to open the mail.
10. The method claimed in claim 9, further including the steps of:
informing the carrier to e-mail the contents of the mailpiece to the recipient; and
mailing by e-mail the contents of the mailpiece to the recipient.
11. The method claimed in claim 9, further including the steps of:
informing the carrier to e-mail the contents of the mailpiece to one or more specified e-mail addresses; and
mailing by e-mail the contents of the mailpiece to the specified e-mail addresses.
12. The method claimed in claim 9, further including the steps of:
informing the carrier to send by facsimile the contents of the mailpiece to the recipient; and
mailing by facsimile the contents of the mailpiece to the recipient.
13. The method claimed in claim 9, further including the steps of:
informing the carrier to facsimile the contents of the mailpiece to one or more specified facsimile numbers; and
sending by facsimile the contents of the mailpiece to the specified facsimile numbers.
14. The method claimed in claim 1, wherein the recipient notifies the carrier to deliver the mail to the recipient at a different address.
15. The method claimed in claim 1, wherein the recipient notifies the carrier to deliver the mail to the recipient by a slower delivery method than that paid for by the sender.
16. The method claimed in claim 1, wherein the recipient notifies the carrier to deliver the mail to the recipient by a faster delivery method than that paid for by the sender.
17. The method claimed in claim 1, further including the step of:
charging the recipient for receiving notification of the availability of the deposited mail.
18. The method claimed in claim 1, further including the step of:
charging the recipient for delivering mail to the recipient in the manner specified by the recipient to the carrier.
19. The method claimed in claim 1, further including the step of:
charging the recipient for receiving notification of the availability of the deposited mail; and
charging the recipient for delivering mail to the recipient in the manner specified by the recipient to the carrier.
20. The method claimed in claim 1, further including the step of:
informing the sender of the delivery of the mail.
21. The method claimed in claim 1, wherein the recipient notifies the carrier to hold the mail for a specified period of time.
22. The method claimed in claim 1, wherein the recipient notifies the carrier to destroy the mail.
23. The method claimed in claim 1, wherein the **recipient notifies** the carrier to **recycle** the material comprising the **mail** .

24. The method claimed in claim 1, wherein the recipient is notified via e-mail of the availability of the deposited mail.
25. The method claimed in claim 1, wherein the recipient is notified via telephone of the availability of the deposited mail.
26. The method claimed in claim 1, wherein the recipient is notified via facsimile of the availability of the deposited mail.
27. The method claimed in claim 1, wherein the recipient is notified via television of the availability of the deposited mail.
28. The method claimed in claim 1, wherein the carrier is notified via e-mail of the manner in which the recipient would like the mail delivered.
29. The method claimed in claim 1, wherein the carrier is notified via facsimile of the manner in which the recipient would like the mail delivered.
30. The method claimed in claim 1, wherein the carrier is notified via telephone of the manner in which the recipient would like the mail delivered.
31. The method claimed in claim 1, wherein the recipient notifies a data center who notifies the carrier of the manner in which the recipient would like the mail delivered.

```
?

S (TRANSLAT??? OR MAP????) (S) ADDRESS (S) TELEPHONE (S) NUMBER
Processing
Processed  10 of  28 files ...
Processing
Processed  20 of  28 files ...
Completed processing all files
         1331378  TRANSLAT???
         1420338  MAP????
         3095725  ADDRESS
         4009409  TELEPHONE
        12122830  NUMBER
      S3    1891  (TRANSLAT??? OR MAP????) (S) ADDRESS (S) TELEPHONE (S)
                  NUMBER
?

S (TRANSLAT??? OR MAP????) (20N) NAME (20N) ADDRESS (20N) TELEPHONE (20N) NUMBER
Processing
Processed  10 of  28 files ...
Processed  20 of  28 files ...
Processing
Completed processing all files
         1331378  TRANSLAT???
         1420338  MAP????
         4057380  NAME
         3095725  ADDRESS
         4009409  TELEPHONE
        12122830  NUMBER
      S4    1032  (TRANSLAT??? OR MAP????) (20N) NAME (20N) ADDRESS (20N)
                  TELEPHONE (20N) NUMBER
?


?

S (TRANSLAT??? OR MAP????) (10N) NAME (10N) ADDRESS (10N) TELEPHONE (10N) NUMBER
Processing
Processed  10 of  28 files ...
Completed processing all files
```

```
         1331378  TRANSLAT???
         1420338  MAP????
         4057380  NAME
         3095725  ADDRESS
         4009409  TELEPHONE
        12122830  NUMBER
      S5     504  (TRANSLAT??? OR MAP????) (10N) NAME (10N) ADDRESS (10N)
                  TELEPHONE (10N) NUMBER
?

S S5 AND (MAIL (10N) RECIPIENT)
             504  S5
         3605535  MAIL
          304444  RECIPIENT
           12929  MAIL(10N)RECIPIENT
      S6       6  S5 AND (MAIL (10N) RECIPIENT)
?

T S6/KWIC/1-6

  6/KWIC/1     (Item 1 from file: 348)
DIALOG(R)File 348:(c) 2003 European Patent Office. All rts. reserv.

...SPECIFICATION sent by the subscriber using any communications channel
  monitored by the server and having an address associated with the
  subscriber. When the communications scenario involves a message, the name
  and address pair may be collected by parsing the header information
  association with the message. When it involves an incoming call, the
 name and address (□number□ ) information may be derived from the
  network call set-up message (e.g. SS7-1SUP, ISDN, or caller
  identification (caller ID)) information conventionally received as part
  of the telephone answering scenario. The address (□number□ )
  associated with outgoing voice or facsimile telephone calls made while
  connected to the unified communications system may be collected, and a
 name associated with each number by either referring to a network for
 number  -to- name  mapping  , or by prompting the subscriber to record a
  brief voice tag to associate with the number  . This voice tag would be
  used in place of the text-name confirmations when confirmations...request
  that a voice telephone number is the appropriate address 414. Similarly,
  where an e- mail message is to be forwarded to a recipient  , the system
  can assume that the appropriate address 414 is an electronic messaging
  address. Where...


  6/KWIC/2     (Item 1 from file: 349)
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

Fulltext Availability:
  Detailed Description
  Claims

Detailed Description
...  the selected location ad associated data as a part of the body of the
  e- mail  . The recipient user may then add further text to the email and
  send it in a conventional...and so on. Further user interface means are
  displayed for entering or selecting an e- mail address, mobile telephone
  number or other network address for the recipient  , for entering a user
  message, and for sending the communication when it is finished. In...
  perform another function as before.
```

Sending location associated data by communication modes such as e- **mail** , text messaging and so on, may be particularly useful for **recipient** users who are not registered with Internet location application server 56 or, in embodiments to...

Claim
... one or more items of additional data are one or more of the following: postal **address** data; **telephone** **number** data; e-mail□address□data; network resource identifier data; user-allotted geographical location **name** data; temporal data; geographical location type data, a photographic image or video file; a **map** file; an audio file; a text file; a diary or calendar event; a hypermedia file...to claim 66, wherein the additional data includes one or more of the following: postal **address** data; **telephone** **number** data; e-mail□address□data; network resource identifier data; user-allotted location **name** data; temporal data; geographical location type data, a photographic image or video file; a **map** file; an audio file; a text file; a diary or calendar event; a hypermedia file...

6/KWIC/3 **(Item 2 from file: 349)**
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

Fulltext Availability:
Detailed Description
Claims

Detailed Description
... an intended
party directly via telephone; for web-page access in relation to the intended **recipient** ; and for the sending of an e- **mail** message to the intended **recipient** . The organizing feature also includes electronic or conventional publications of user and administrative manuals of...

Claim
... said manual is an
administrative manual.

65 The method of Claim 53, wherein said domain **name** server is operated by a **telephone** service provider.

66 A method for **mapping** an **address** string, said method comprising:
receiving as input a valid **address** string having at least one component wherein said component is a member of an alpha-numeric set;
mapping each said component of said address string to a predetermined corresponding **number** ;
recognizing numeric categorical identifiers in said mapped components; and
re-sequencing said mapped components based...

6/KWIC/4 **(Item 3 from file: 349)**
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

Fulltext Availability:
Detailed Description

English Abstract
...printer address and print format capabilities for a corresponding destination printer local to the intended **recipient** of the e- **mail** message. The RPS provider modifies the e-mail message to conform, as necessary, to the...

French Abstract
...la capacite de format d'impression pour une imprimante destinataire correspondante la plus proche du **recipient** voulu du message e- **mail** . Le dispensateur RPS modifie le message e-mail pour le conformer, de facon requise, a...

Detailed Description
... to remote I 0 destination printers for automatic printing without requiring intervention by the intended **recipient** of the e- **mail** message.

Background of the Invention
Facsimile is a well-known and pervasive service: it allows...

...address and print format 35 capability for a corresponding destination printer local to the intended **recipient** . The RPS provider modifies the e- **mail** message (includina any enclosures or attachments) to conform. as necessary. to the print format capability...

...be converted to a print format compatible with a destination printer local to the intended **recipient** of the e- **mail** message, and delivered to the destination printer for printing. The RPS network services may be ...destination end user).

Mariv variations of the above addressino scheme are possible. For example. a **telephone number** may be used as a unique destination identifier, C.(T.. 978 757 and another RPS provider **name** . e.(,., "remote-print.net" for the RPS service provider. The 10 senderoftliee-mailmessagewouldthusaddressitto:"978 7575@Fi)remoteprint.net". In this case. the RPS would **map** (correlate) the **telephone number** to a corresponding destination printer **address** and print format capability local to the destination user. Note that in this case, the telephone **number** has no application to the telephone system - it is simply a means for uniquely identifying...or 30) at the destination site 14 - whichever printer is IO designated for the intended **recipient** of the e- **mail** message. In this example. the RPS includes the following services.

Security service provides standards-based...

...0 alternate delivery address, e.g., alternate printer or fax machine or both;
0 e- **mail** address of the **recipient** .

The remote print service assembles a complete remote print document by creating the cover page...the recipient's
designated printer with a cover page addressing the
document to the appropriate **recipient** .
E- **Mail** Notification: Recipients will have the option to request e-mail notification of in-bound documents...

6/KWIC/5 (Item 4 from file: 349)

DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

Fulltext Availability:
Detailed Description

Detailed Description
... called
phoneserv.net. Server 23 is adapted to access database 24 which is a database **mapping** email addresses to descriptors, including, in this example, personal **name** , business **name** , street□address□ , and **telephone number** . In this example, a search of the entries for **telephone number** 6193312345 returns the email **address** xyzx40;domain.com. Server 23 then substitutes the **address** xyzx40;domain.com for the received **address** of 6193312345x40;phoneserv.net and sends the message with this **address** onwards via the Internet to the desired destination

To further enhance the usefulness of this...invention. The ISP's SMTP server 42 is configured to forward undelivered mail to the **mail** server 43. The server 43 attempts to resolve the correct **recipient** address through the information contained in the original TO: address field. If it is successful...

6/KWIC/6 (Item 5 from file: 349)
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

Fulltext Availability:
Detailed Description

Detailed Description
... only in the recipient service.

For example, assuming that the user has selected the data **mail** service as the **recipient** service, then a voice message which arrives via the voice service WO 87/07801 PCT...voice telephone 101,102.

Message senders are able to create a message without -knowing the **recipient** 's retrieval system or retrieval device. For instance, an electronic **mail** user can create a meeting notice and send it to several people. These recipients may or may not be electronic **mail** users. One **recipient** may receive the meeting notice from (1) the United States Postal Service via an electronic...his or her mail service and requests to create a mail message (e.g. CREATE **MAIL** 1001). The service asks the user for the first **recipient** (TO 1002) and the user enters the recipient's name, "Tom Smith". The application also...component of the message is formatted in a "keyword: value" structure. The recipients' names are **mapped** to a logical and a physical **address** for connecting to the recipient's receiving application (i.e. the destination **address**). This could take the form of a device line **number** and a **telephone number** , block 1010. The software control to perform this function is now wellknown.
A universal header...

...transport
header 401), from the information supplied by the user, for instance, the user's
name and **address** (logical and physical), the names and addresses of the
recipients, the date and time the...The voice service may send a

notification to the text-only unified mailbox
telling the **recipient** that there is new voice **mail** waiting; or P
2. The voice service may send a text version of the voice...
?